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AMERICAN BUILDER

and Building Age

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MARCH, 1939

61st Year Vol. 61, No. 3

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PUBLISHER'S PAGE

Government, Labor and Business

THE American Federation of Labor recently issued a significant statement. It emphasized that in the *tenth year* of the depression there are still, 10,000,000 to 12,000,000 unemployed, and that they can be given useful employment at good wages *only by private business.* It, therefore, called upon the *government* to adopt an attitude that will change the "psychology" of business.

This is, in effect, a declaration by the country's largest labor organization that the *attitude of government* is the principal obstacle to recovery and re-employment.

THROUGHOUT the depression there have been two schools of thought regarding economic policies. One has favored the policies of the New Deal which have included abandoning the gold standard of money; reducing hours of work and increasing hourly wages in industry; advancing farm prices by having the government pay the farmers to curtail production; making huge government expenditures on public works and for relief; increasing government interference and competition with business; and incurring huge government deficits and indebtedness. *The labor unions usually have supported these policies.*

The other school of thought has opposed these New Deal policies upon the ground that they *tended to prevent recovery and re-employment by curtailing profits and investment in private business.* The country had recovered repeatedly from depressions before. Why, then, believe that so many unprecedented government policies burdening and interfering with business would promote recovery this time?

Who has been right? The American Federation of Labor, in calling on govern- to give private business a chance, and spokesmen of government in now constantly calling on business to "co-operate" for recovery, concede, at least, that under the policies followed, *recovery has not occurred*—as was predicted by those who opposed these policies.

What, then, does the Federation mean by the government changing its attitude? And what does the government mean when it asks business to "co-operate"? Business has to be conducted *under the laws and policies of government.* Six years' experience under them has proved that the present economic policies of government are unsound. But neither the Federation nor the spokesmen of the New Deal propose any important changes in them. How, then, do they propose that business shall be "given a chance"? Why assume business can "co-operate" effectively for recovery in future under laws and policies which six years' failure of recovery has shown are unsound?

WHY, then, talk about changing the "psychology" of business; and call on it to "co-operate"? Why not talk, instead, about changing laws and policies by which government for six years has made recovery impossible?

Business needs a change in its "psychology," all right—but no change in its psychology will do any good that is not due to *good reasons* for changing its psychology.

It is mainly the fault of *government and labor* that we still have the depression and 10,000,000 to 12,000,000 unemployed; and what is really needed to restore prosperity is *co-operation of government and labor with business*—and co-operation especially in changing policies for which politicians and labor, not business, are responsible.

Samuel O. Dunn

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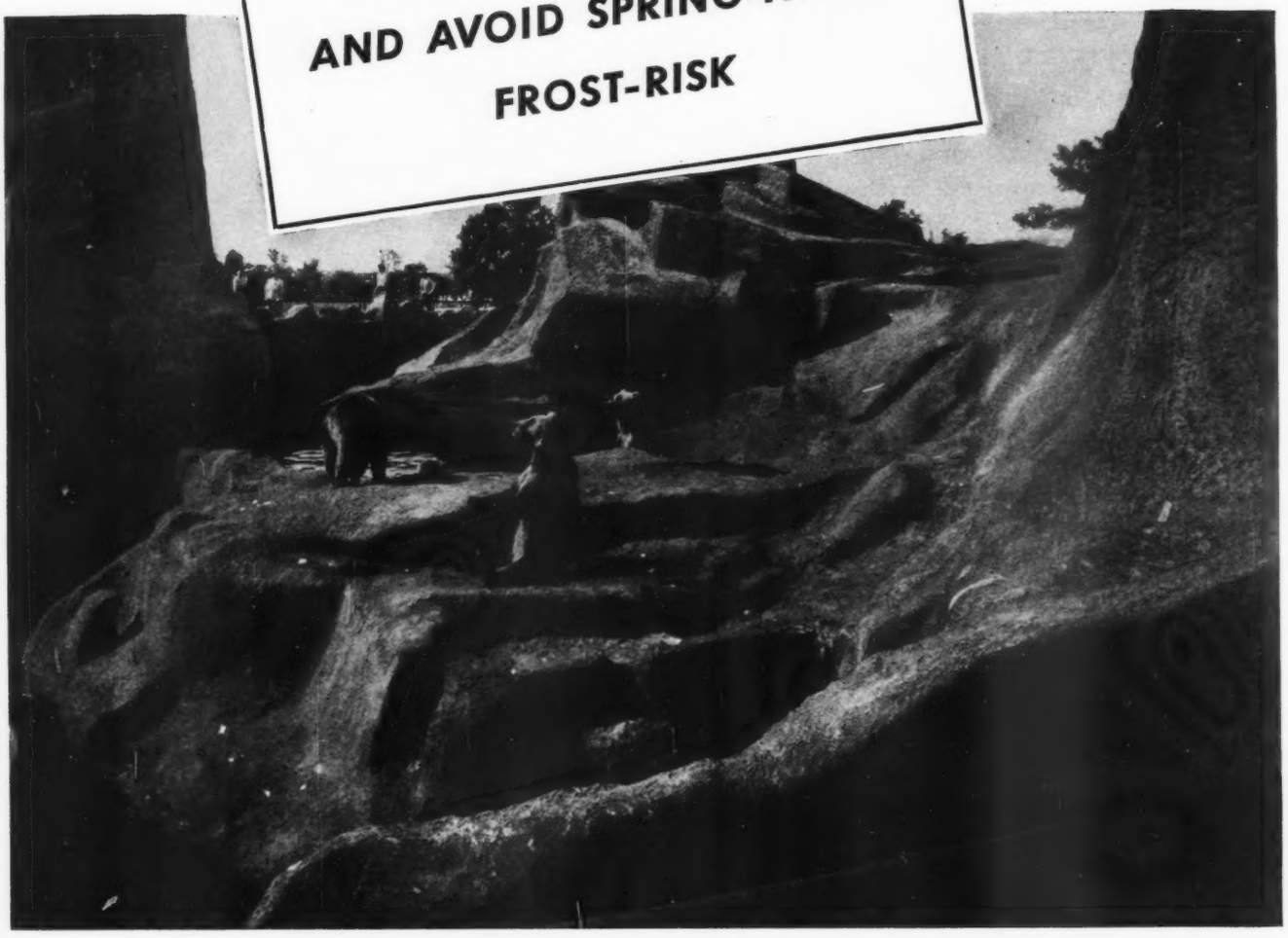
BEAR THIS IN MIND
AND AVOID SPRING-NIGHT FROST-RISK



EARLY Spring is a time of serious frost hazard. Nights turn cold, even when days are balmy; unprotected concrete is often exposed to freezing damage. Play safe—use 'Incor' 24-Hour Cement.

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AMERICAN BUILDER
AND BUILDING AGE

We Agree It's a "Grave Error"

A RECENT letter to magazine editors from Charles S. Wanless, Springfield (Ill.) builder and chairman of the Land Developers and Home Builders Division of the National Association of Real Estate Boards, points out that, "a very grave error is being committed by many of our national publications in mentioning costs of homes in their magazines." He suggests that in the future the matter of cost be referred to the local architect or builder because, as he puts it, "due to the fact that building costs vary in different localities, the practice of establishing a set cost price of a house results in misunderstanding and ultimately works a very grave hardship on all builders of these houses."

We appreciate this letter, Charlie Wanless, and hope that it bears fruit. Only you did not make it half strong enough. The harm that is done by some of the consumer and architectural magazines in publishing ridiculously misleading figures on the price of houses is inestimable. Not only have these publications misled the public on building costs, but they have grossly misled them on building design by constantly publishing the theoretical imaginings and visionary, modernistic dreams of some amateur or impractical designer.

American Builder's answer to this letter has long been written in the month by month record of its pages. The TruCost system fully described in this issue provides a workable system for figuring the cost of any house locally, using local material and labor costs based on the contractor's own figures.

This is a subject that this publication believes should be taken up and pushed further. Definite instances where misleading price information and freak designs have brought about harmful results are invited.

EXTRA VALUE IN THE BASEMENT

NO less than half a dozen distinct new uses for cellar space as extra living room for the family as the result of basement and heat modernization are revealed in a recent survey by the American Radiator Company.

These include hobby rooms to cater to the special interests of any member of the family, children's play rooms, with game and athletic equipment, utility rooms, studio or study offering a quiet room or home office when such a retreat does not exist upstairs and the rumpus room that permits boisterous recreation without disturbing the household.

Utilization of basement space by creation of new rooms for the home gives new meaning and a new interest to the home—brings the fun of living within the home's four walls. Typical uses which have been reported: An amateur photographer's workshop with motion picture theater and dark room adjoining; a "museum" for a man whose hobby is collecting Indian relics; a low-ceilinged basement was utilized to provide the atmosphere of a ship below deck for a yachtsman who made ship modeling in soap a hobby; a theater enthusiast built his own marionette theater and workshop; a retreat for an aviator interested in modeling planes; a private aquarium; an indoor garden, complete with flower boxes and garden swing; a playroom with the atmosphere of a kindergarten; a utility room not only for the storing of preserves but where canning can also be done; a cozy den and reading room; a real music room for practice, study and enjoyment; a city penthouse and open air garden; a Continental music hall built around a moving picture theater; a recreation room, complete with dance floor; a gaming table and space for quoits and shuffleboard; a sports room with complete equipment from a rowing machine to dart pins; and others equipped for archery, billiards, even bowling, and with an indoor shooting gallery.

Architects and builders should bear in mind that home owners who do not take full advantage of the excellent livable space provided by the basement are receiving only a portion of the benefits of their home investmnt. As a rule full basements represent from 30 to 50 per cent of the home's cubical living area. With the installation of a modern heating system—and it is no longer necessary to install it in or near the center of the basement—the basement of the average well-built house can be made just as attractive and comfortable as the basement apartments of the huge apartment buildings, and will go far toward supplying accommodations for the modern family's varied needs. Modern heating and modernized basements go hand in hand.

FRONT COVER MESSAGE

New Closets—And a Mirror Niche Between

ONE happy solution to the problem of providing more bedroom closet space in homes that are short on places to hang things is shown on the Front Cover. A two-foot strip along one wall was converted into a pair of new closets, flanking a mirrored alcove into which the dressing table fits, making the reduction in actually usable room space very slight, while the mirror imparts an impression of spaciousness that in many cases far more than makes up for the slight narrowing of the room.

San Francisco Opens Its Golden Gate Exposition

"Treasure Island" Holds Strong Lure for Builders

BUILDERS are looking West this month; for on February 18 the great International Exposition at San Francisco stood complete, with its doors thrown wide to visitors. Not only of interest to architects, engineers and builders of the Pacific Coast but also of importance to the nation-wide construction industry are the astonishing structures on Treasure Island, in San Francisco Bay.

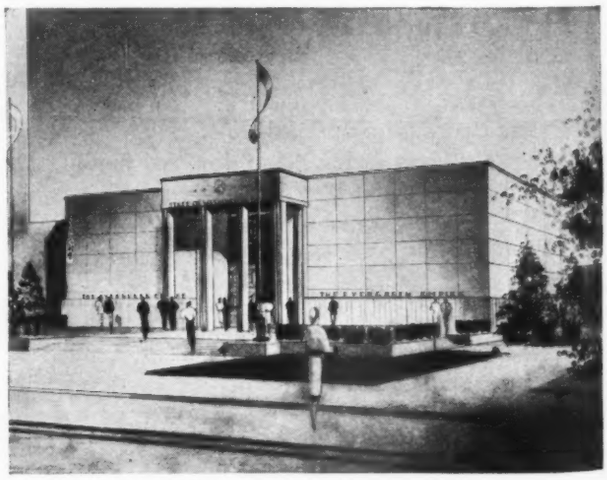
The word "astonishing" is used advisedly, for never before has the building industry been confronted with a problem comparable to that presented by this man-made island of 400 acres.

Less than three years ago the Yerba Buena shoals lying in the center of San Francisco Bay were covered with water varying from 2 feet to 26 feet in depth. Today, through the enterprise of army engineers, the federal government and private interests, a completed island over a mile in length, over half a mile in width and some 13 feet above mean tide carries major buildings of importance. Three of these immense buildings are to be permanent, to house the city's airport; the others are to go the usual way of exposition structures.

While it is true that with the wind-up of the Fair on Dec. 2, 1939, only three of the structures now on the island will remain—the Administration Building and the two large hangars—yet inspection by construction experts invariably brings forth exclamations of amazement at the durable and permanent appearance of the other buildings.

Treasure Island is reached by bridge and also by fast ferry service from San Francisco and from Oakland. Although the dominant theme of the Exposition is travel and recreation, the visitor will find tribute paid to mechanical, industrial and cultural progress. In the three permanent buildings of concrete which will remain as airport structures after the Fair closes are housed the administrative offices, the fine and liberal arts exhibits and the transportation display.

The federal government occupies a seven-acre building, where ceremonies, concerts, army maneuvers and



WASHINGTON State Building at the San Francisco Fair, an example of advanced construction practice.

BIRD'S-EYE PHOTO DIAGRAM OF FAIR

SNAPPED early in February, the above air photograph of Treasure Island gives a hint of the startling beauty of the most attractive site an international exposition has ever enjoyed.

(1) Ferry slips for San Francisco boats. (2) Ford Building. (3) Livestock Barns. (4) Coliseum. (5) Gayway or Amusement Zone. (6) Electricity and Communication, Hall of Science. (7) Vacationland. (8) Hall of the Mineral Empire. (9) Homes and Gardens. (10) Recreation Building and Field. (11) Hall of Western States. (12) California State Auditorium. (13) Pacific House. (14) Buildings of South American countries. (15) France, Brazil and Argentina. (16) Foods and Beverages. (17) Homes and Gardens and Hall of Agriculture. (18) Southern California Building. (19) California Commission's Hall of Flowers. (20) San Francisco Building. (21) California State Building. (22) Mission Trails Building. (23) Alameda-Contra Costa Building. (24) Shasta-Cascade Building. (25) Redwood Empire Building. (26) Alta California Building. (27) Sacramento Valley-Tahoe Region Building. (28) San Joaquin Valley Building. (29) Palace of Fine Arts. (30) Hall of Aviation. (31) Yerba Buena Woman's Club House. (32) Administration Building.

pageantry will be held; there exhibits will touch upon many phases of government activity, and there will be a representation of American Indian civilizations.

In the Pacific basin area, along a chain of lagoons, nations of the Pacific have collected evidences of their native architecture, industries, arts and history. Other nations are represented by their own structures or by displays in the International Hall, one of the main palaces.

Seventeen big buildings, led by the Hospitality Center, tell California's own story, with special attention devoted to livestock, agriculture, floriculture and to specific areas.

More than 250 outstanding industries have reserved space, some with their own buildings. The Hall of Foods and Beverages speaks for itself. In the Hall of Science the emphasis, according to Fair officials, is on "sound living." The Hall of Mines, Metals and Metallurgy includes a million-dollar "Treasure Mountain" that will present a picture of the western mining industry.

In the Recreation Building are a small theatre, a hobby and craft exhibit room, junior museum, library and reading room. Nearby is an athletic stadium and playground. On the Gayway—"forty acres of fun"—will be found diversions ranging from dances by Javanese girls to mechanical rides and games of skill. Among the many continuous entertainment features will be a "Cavalcade of the Golden West," the story of the region from early explorations to modern times.

Inasmuch as Treasure Island was constructed by dredges sucking up black sand from the bottom of the Bay and spewing mountains of it onto the shoals, obviously neither rock nor other natural semi-permanent foundations were available to the builders.

Naturally the employment of piling was resorted to on an extensive scale. Practically all the important structures rest on durable piles driven many feet into a hardpan beneath the top sand.

Realizing that the island naturally is subjected to rather abrupt and constant changes of temperature, much moisture and prevailing trade winds blowing constantly in through the Golden Gate, construction materials for both exteriors and interiors were scanned most carefully by the architects. Distinctly, water resistant properties were of paramount importance coupled with freedom from checking, buckling and any kind of warping.

Hot-plate resin bonded fir plywood was used on some 58 of the exposition buildings. It is interesting that the original specifications and the insurance rates on the buildings called for ½-inch thick hardwall plaster, applied over Byrket sheathing or metal lath. After numerous tests, before the fire underwriters and the Fair Association, these officials were convinced that 7/16-inch 5-ply resin-bonded fir plywood, Rezited at the factory and then textured with Rezitex applied in one coat of a pound and a half to the yard, would give them a comparative fire retardant surface, in addition to giving them greater structural strength than they would be able to get by using any other type of material. Super-Harbord from Harbor Plywood Corp., Weldwood from U.S. Plywood Corp., and Resnprest from M and M. Woodworking Co., were accordingly used.

The Architectural Division of the California Commis-

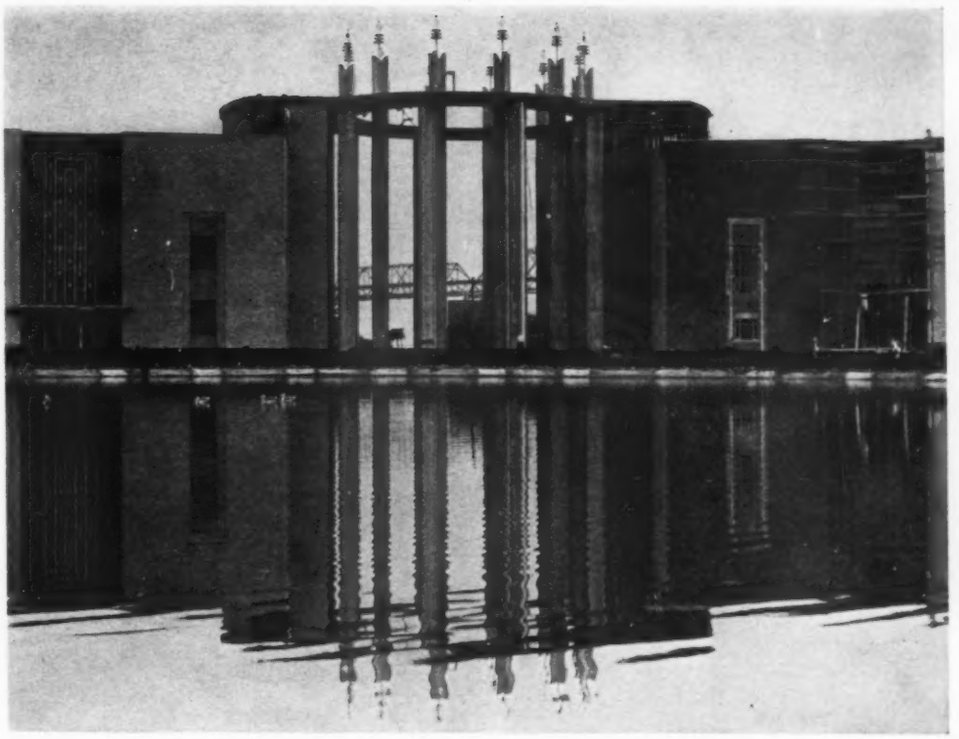
DOMINANT showpiece of the Fair is this exciting group—the Tower of the Sun, 400 feet high, and the Elephant Towers. Thousands of full size palm, olive and other rare trees and shrubs transplanted onto this enchanting man-made island.

sion, composed of a group of young and forward-looking men, aware of the possibilities of plywood for modern design, were more or less given a free hand and were able to put into actual practice some of their ideas and theories regarding the use of plywood for achieving greater structural strength along with unusual beauty in design. Some very interesting results, therefore, have been obtained on the California State Group.

While the Federal Building, designed by Timothy L. Pflueger, architect, and with R. S. Chew as consulting engineer, is not one of the above group, it is one of the most outstanding structures of all the plywood buildings on the Island, in that it is built contrary to the usual accepted engineering principles. For example, the Colonnade of States Towers, using the 3-inch plywood gusset plates, are 106 feet high, and are only 6 feet in diameter, making the height sixteen times greater than the base. The studdings in this building are three by tens, and are spaced on 4-foot centers, with three by four headers, at 4-foot levels, and, as the plywood was laid horizontally, this gave them a backing at each horizontal joint. Six penny galvanized double-head scaffolding nails, spaced on 4-inch centers, were used and have given the effect similar to riveting on steel plate. As this building is finished natural, by giving it two coats of Rezite, in addition to its primer coat at the factory, a very interesting and beautiful finish is the result.

One of the smaller buildings on Treasure Island that is of special interest because of its unique construction is the Washington State Building. Plywood outside and inside—plywood shipped direct from the State of Washington—make this a thoroughly Washington product. In addition, photographic murals and dioramic displays depicting the plywood and other regional industries in Washington, together with landscaping with native Washington shrubbery, complete the Washington atmosphere.

PLYWOOD as an exterior construction material is demonstrated in the California State and County group of seventeen buildings, shown in the middle distance on the right. It not only covers practically all exterior surfaces, but is also a structural factor of importance, being used for gussets, to simplify connections for bracing members in the field. This results in more rigid walls than are obtained in ordinary sheated-wall construction.



ROMANTIC water settings give the Treasure Island Buildings an added appeal. Here we see the California Hospitality Building and, to right, the San Francisco Building with plywood being applied.

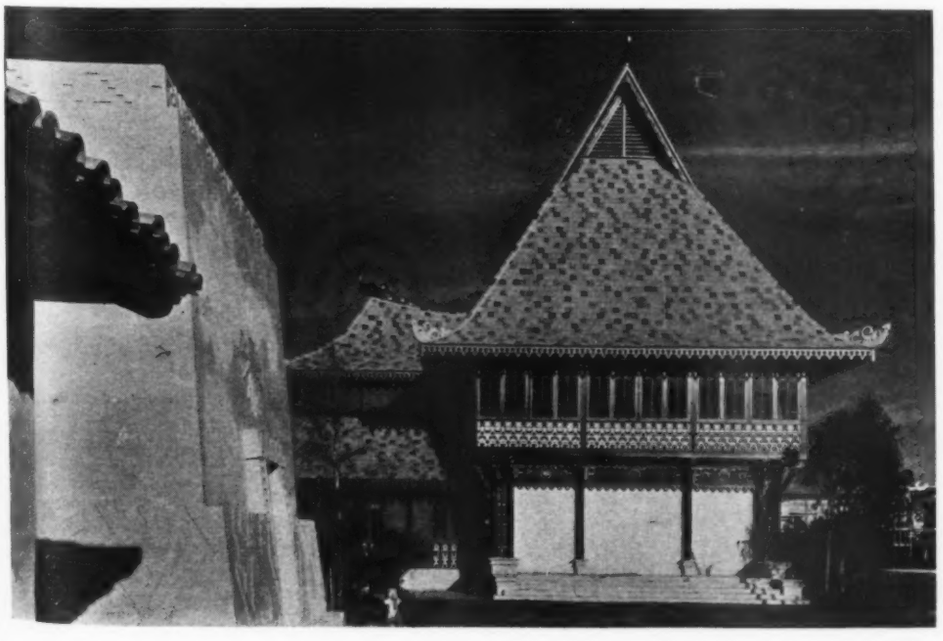
A modernized Colonial type of architecture was decided upon for this building by the group of three Seattle architects who were in charge of the plans. This conservative design was decided upon, as it was felt that simplicity of line would make the building stand out among the mass of other ultramodern designs used.

"Several factors, we believe, will aid in giving the Washington State Building prominence," Victor N. Jones, member of the committee said. "One is the simplicity of design, which contrasts with the spectacle of 'suspended time' spirals and ultramodernism on every hand. We believe the modernized Colonial style will be restful and inviting to weary sightseers."

Throughout the entire exposition night illumination is most elaborate and effective. Edward A. Jewell, writing in the New York *Times* magazine of Feb. 12, describes the Treasure Island lighting:

"Such is the picture by day. At night the whole look of this Pageant of the Pacific is startlingly altered. They turned the lights on for this writer one evening. The Golden Gate Fair, as seen across the bridge, shone with an enchantment quite new, until then untasted. So easily might all the gentle magic of an afternoon be obliterated by inept, garish artificial illumination! But the magic, if it assumed now an unfamiliar guise, was still regnant. Indeed, it had become, with the pressing of a switch, intensified.

"There is more color by night. The palette then is higher and yet, not unhazardous, this painting of surfaces with tinted light is always on the side of reticence and taste. Yes, the nocturnal harmony is quite as discreet and true, its rhythm keyed to a kind of romantic, memorable silence by pauses of dark, rich and mysterious, which occur, as they must, in the design."



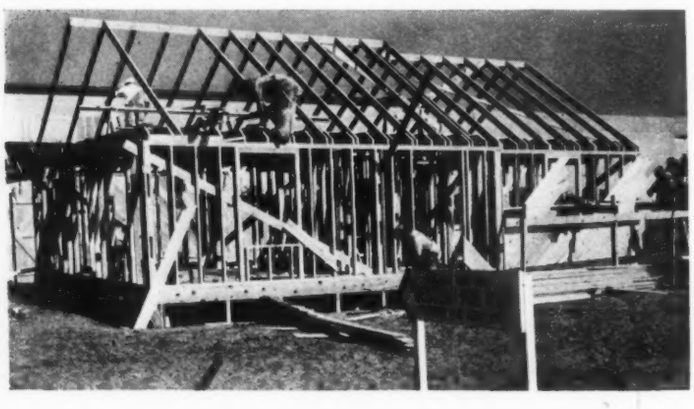
ARCHITECTURAL inspiration from the Orient. "Johore Dewan," or council-house, in which Johore's display is housed at the Golden Gate International Exposition. The Sultan's own bagpipe band, his famous precious stones, and trophies of big game hunting are features of the exhibit. At the left is the Ecuadorian pavilion.

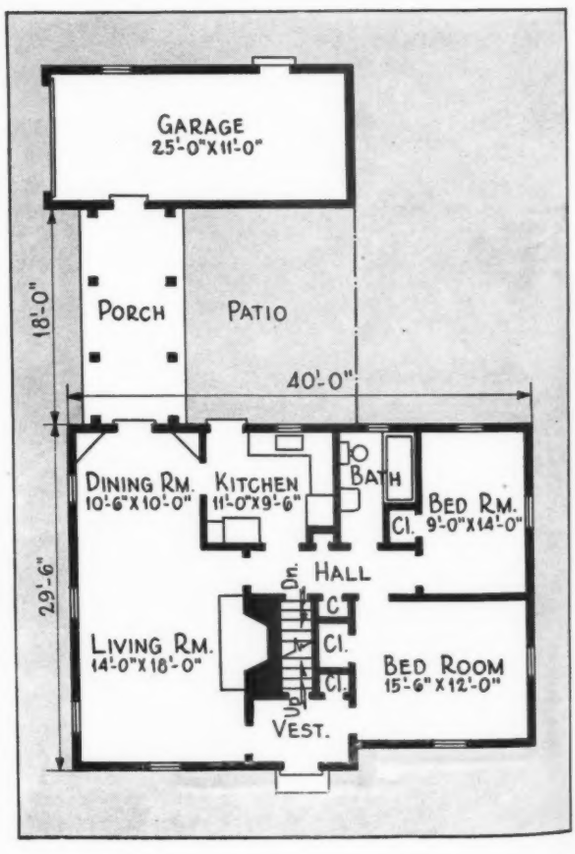
Western Pine Home at Golden Gate Fair

Designed by Royal Barry Wills, Architect, Boston

NESTLED between the large Golden Gate International Exposition buildings stands a pure white Cape Cod Colonial home with blue shutters. This five-room house, as shown above with plan below, features lumber and architectural woodwork throughout of Idaho White Pine, Ponderosa Pine and Sugar Pine. Wide bevel siding, shutters, doors of varying Colonial styles, paneling —both clear and knotty—and special case work are some of the items that will be exhibited by the Western Pine Association in finished form. To the thousands of Exposition visitors, this attractive, entirely-pine home will serve as a practical demonstration of the beauty and comfort that can be incorporated at moderate cost into a small frame home adapted to modern needs. All foundation timbers, as well as sash, frames and screens, were treated at low cost with Permatol; diagonal sheathing was used to give added rigidity (see construction view below). Certigrade Red Cedar shingles were used on the roof; sheet lead flashings and white lead paint were provided to insure a first class job.

AMERICAN BUILDER TruCost FIGURES FOR THIS HOUSE ON PAGE 67





Latest in Kitchens Skillfully Planned and Completely Equipped

TYPICAL of a host of entries in the General Electric Competition is this cheerful, livable dining alcove opening off the well equipped kitchen of the Detroit house shown on next page. It was built by A. C. Peterson, from plans by Ditchy-Farley-Perry. Work areas are smooth and trim, cabinets scientifically constructed and placed. Ample provision has been made for the extensive electrical equipment required in the American home of today.

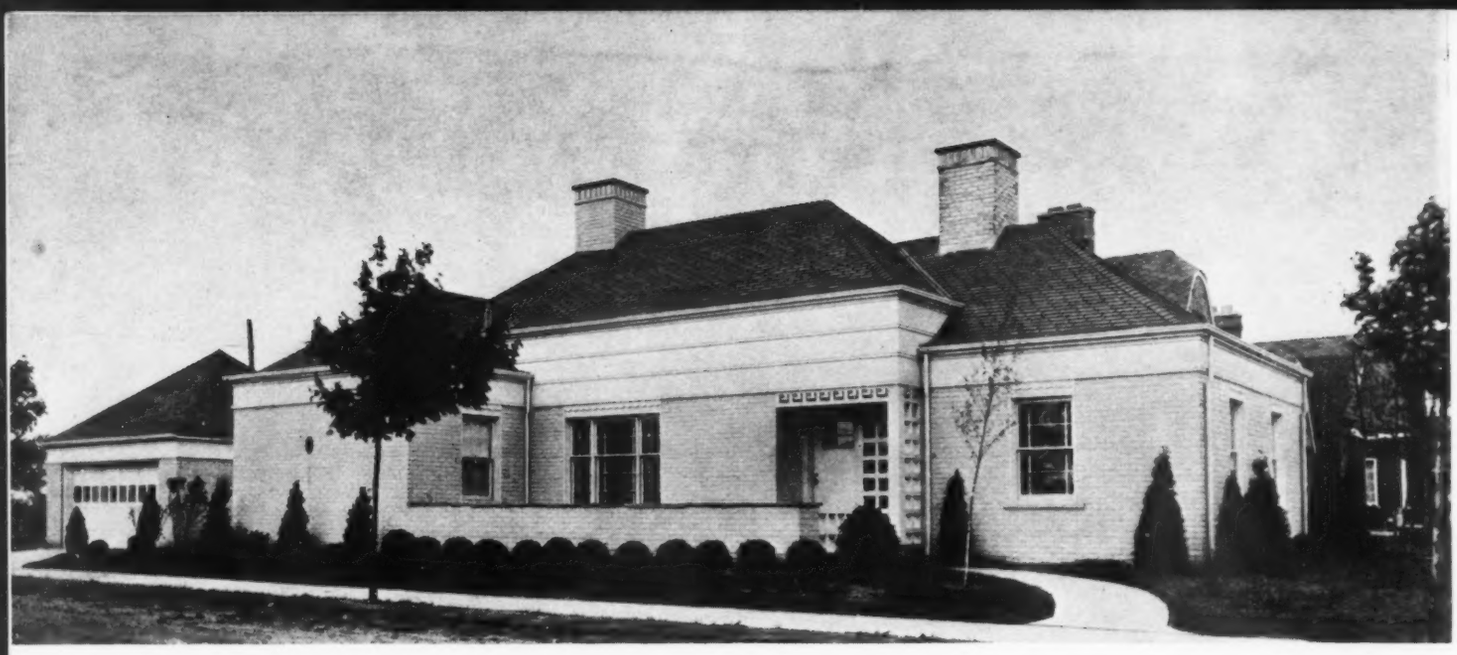
Live-Wire Prize Winning Designs

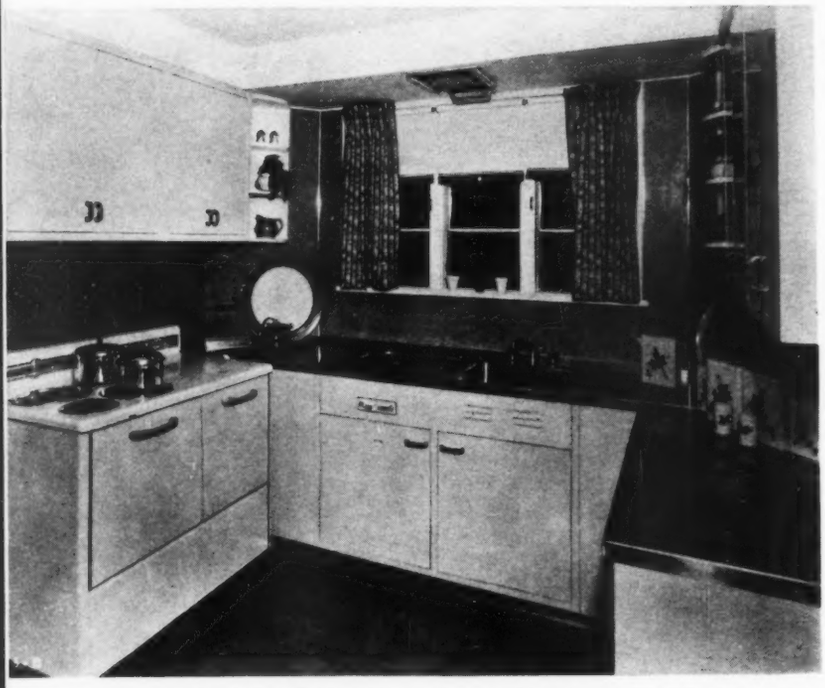
Selected Salable Homes Honored in the General Electric Home Competition

FROM four million dollars worth of houses entered in the recent New-American Home Building Contest sponsored by the General Electric Company, *American Builder* presents on the following pages prize winners and honorable mention designs which have a sensible, salable appeal to today's home buyers.

This home building contest was unique in that houses entered were built within the past two years, and may therefore be said to represent the most recent developments in the field as actually practised by architects and builders. The design, layout and general nature of these flesh and blood houses is considerably different from the architectural competition held by General Electric some years back. In that competition architects and draftsmen submitted a high proportion of futuristic or modernistic type designs which found limited acceptance in the public taste. The comparison should be convincing proof that the public is more sensibly grounded to tradition and sound experience than many architects believe—especially those who submit drawings in competitions.

Prize winning designs in this latest G-E Home Building Contest were announced March 6. More than 33 percent of the entries in the contest were of Colonial design. Twenty-one percent were classified as Bungalow design, 16 percent as Modern, 10 percent English, 6 percent Cape Cod, and the balance distributed among Monterey, Spanish and French Provincial. The contest winners showed a trend towards the spending of a higher percentage of the money invested in a house for items of equipment that give greater comfort, convenience and livability, rather than for size. Another trend indicated was the greater use of attractive dining alcoves as part of the modern kitchen. *American Builder* extends its congratulations to the builders and architects whose work is presented on the following pages.





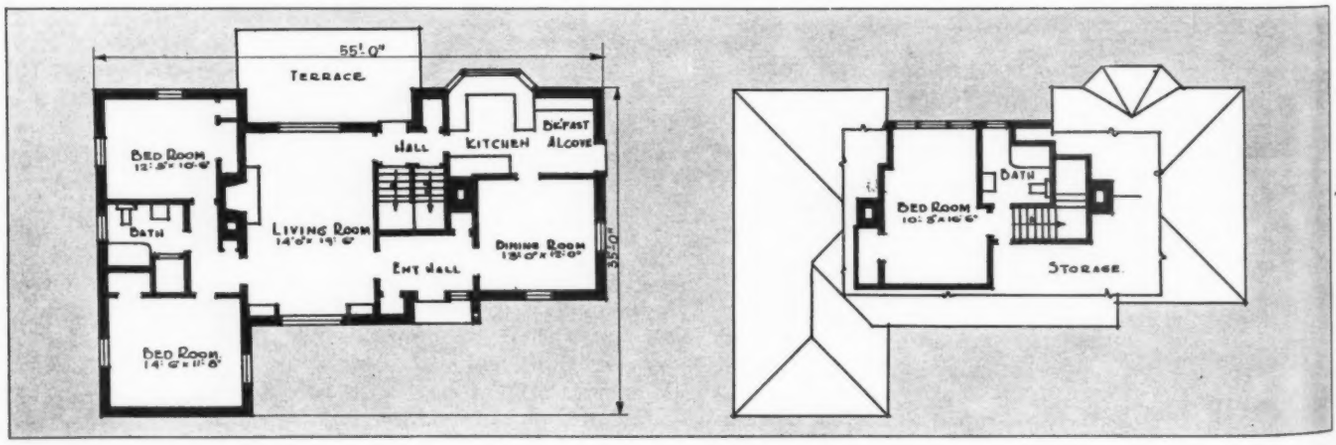
COMPACT, ELECTRIC KITCHEN with efficient U-shaped plan is an outstanding feature of this Detroit house.

RANGE, DISHWASHER SINK, CABINETS IN WORKSAVING PLAN

BUILDER A. C. PETERSON and the architectural firm of Ditchy-Farley-Perry of Detroit, have here produced a house with clean, simple lines and a practical, livable plan. The kitchen-alcove arrangement shown in the plan below is unusually attractive, and the kitchen is well-laid out. It is equipped with an electric range, refrigerator, dishwasher, garbage disposal unit and fan.

TREATMENT of the dining alcove, which is illustrated on the preceding page, is especially effective and in line with a definite trend indicated in General Electric Home Building Contest entries.

AMERICAN BUILDER True Cost FIGURES FOR THESE HOUSES ON PAGE 67



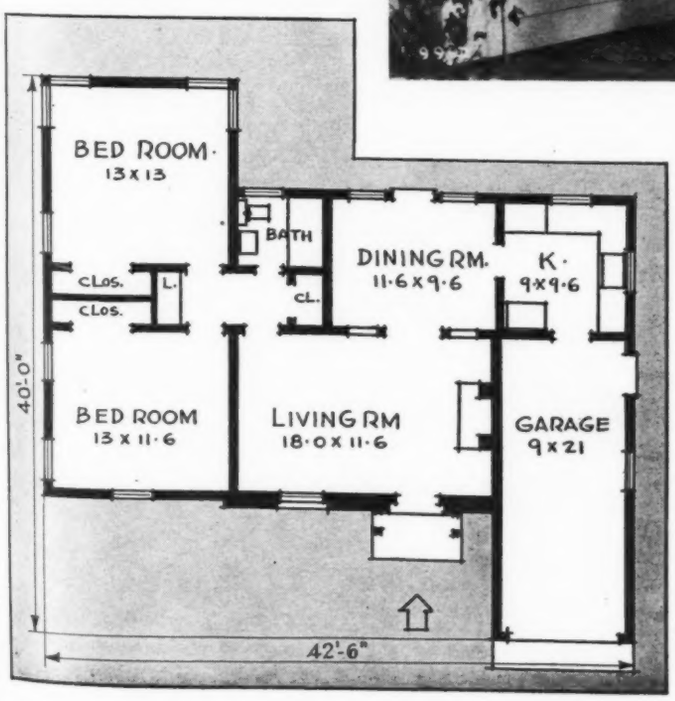
FRONT AND REAR HALLS form an unusual feature of this plan. Both basement and second floor stairs open off the rear hall. Living room is large and well proportioned. The downstairs bedrooms with connecting bath are preferred by many people to upstairs rooms because of easier access, particularly appreciated by older members of the family.

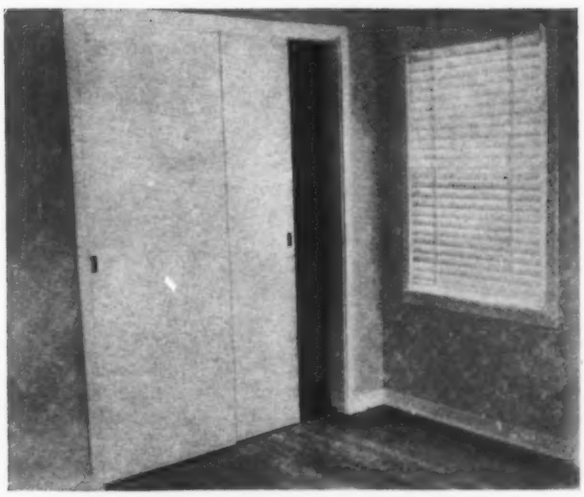
TEXAS HOME FEATURES ATTIC FAN

Eugene Tips, Builder

THIS PRIZE WINNER, built in Houston, Tex., by Eugene Tips, shows how nicely some of the principles of modern design can be applied to the conservative taste of home buyers. The large windows allow ample light and good cross ventilation. An attic fan is installed and a special ventilator for it built into the roof. The builder used kiln-dried lumber of specified moisture content. Plates and floor joists were Wolmanized to resist termites.

FLOOR PLAN of the Tips home features an 18' x 11'6" living room opening into an attractive dining room, which has large French doors leading to the garden. Bedroom closets are well laid out. Architects were Talbott Wilson and Irwin Morris.





SLIDING DOORS are used on bedroom closets.

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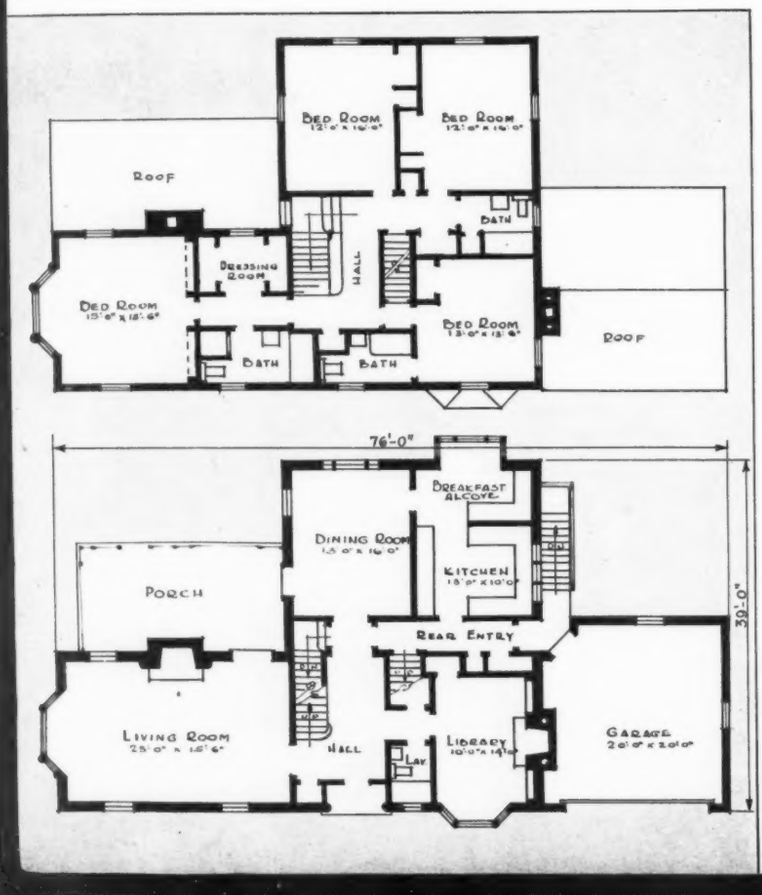


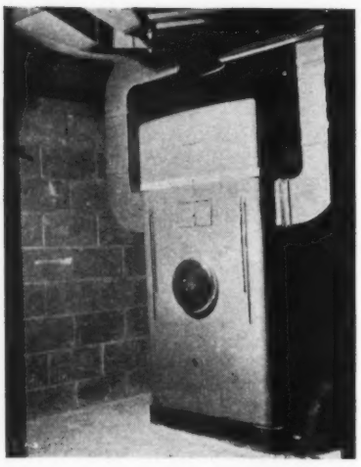
CONSERVATIVELY MODERN

THE "ELECTRICAL STANDARD OF LIVING" is well typified by this prize-winning home from Highland Park, Ill., built for Olive G. Moon by the Zander Construction Co., from plans by White and Weber. The house is modern in plan and interior appointments, has the latest in electrical and mechanical equipment. The large windows let in ample light and sunshine. The 25′ x 15′6″ living room has exposure on three sides, with French doors opening upon an attractive screened porch which may be used for dining.

INCLUDED IN THE MATERIALS and equipment are an electric refrigerator, range, dishwasher, ventilating fan, garbage disposal unit, winter air conditioning system. An attractive feature of the entrance detail is the use of Pittsburgh-Corning glass block. The bathrooms are finished in Vitriolite. Insulite Company Bildrite sheathing is used for exterior walls.

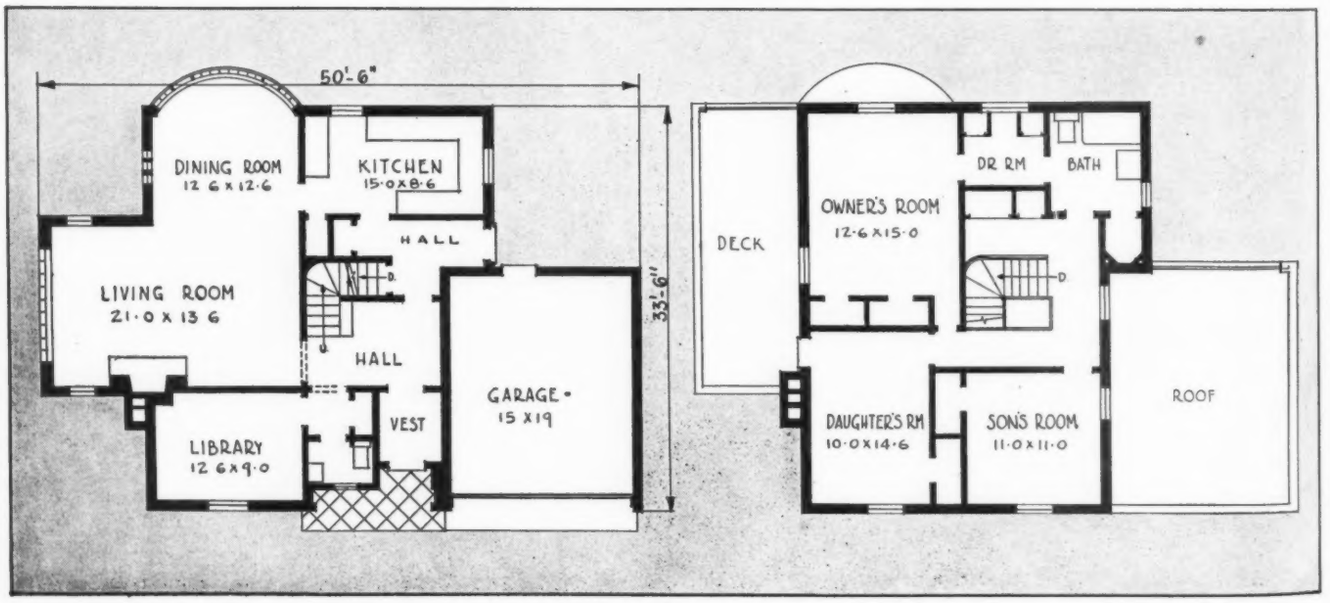
LIVING ROOM of this Highland Park home has modern appointments throughout. Heating ducts are placed beneath the large windows. Fireplace mantel is unusually attractive, with large mirror above.

A CHEERFUL ALCOVE (see floor plan) opens off the electrically equipped kitchen below. The built-in seat, attractive wallpaper, ceiling fan, electric dishwasher and refrigerator are outstanding features.



MODERN PLAN— MODERN EQUIPMENT

THE UNUSUAL FLOOR PLAN of this modern looking entrant in the General Electric Home Building Competition merits study. The dining-living room arrangement gives a spacious effect. The library and lavatory off the hall are nicely placed. The 3 bedrooms upstairs are adequate, and the dressing room-bath layout commands attention. The house has modern wiring with a G-E circuit breaker, an oil-fired winter air conditioner. Other specifications include Rittenhouse door chimes, Penberthy sump pump, Overhead garage doors, Marsh Tile Company's Marlite wall coverings in kitchens and bathrooms, Flintkote 4-ply built-up roof on deck and garage. The house was carefully designed and well built by Earl L. Confer of Detroit.



MONTEREY STYLE IN PENNSYLVANIA

THE OVERHANGING second-story porch and white brick walls give this house in Elkins Park, Pa., a similarity to the Monterey style houses popular in California. It was designed by Architect J. L. Conarroe and built by Roy Randall, Inc. There is an 8'6" x 8' downstairs study, a 13' x 19'6" master bedroom and private bath upstairs, and a very satisfactory room arrangement throughout. The kitchen equipment includes a package receiver, ventilating fan, electric range and dishwasher and G-E steel unit cabinets as shown at right.

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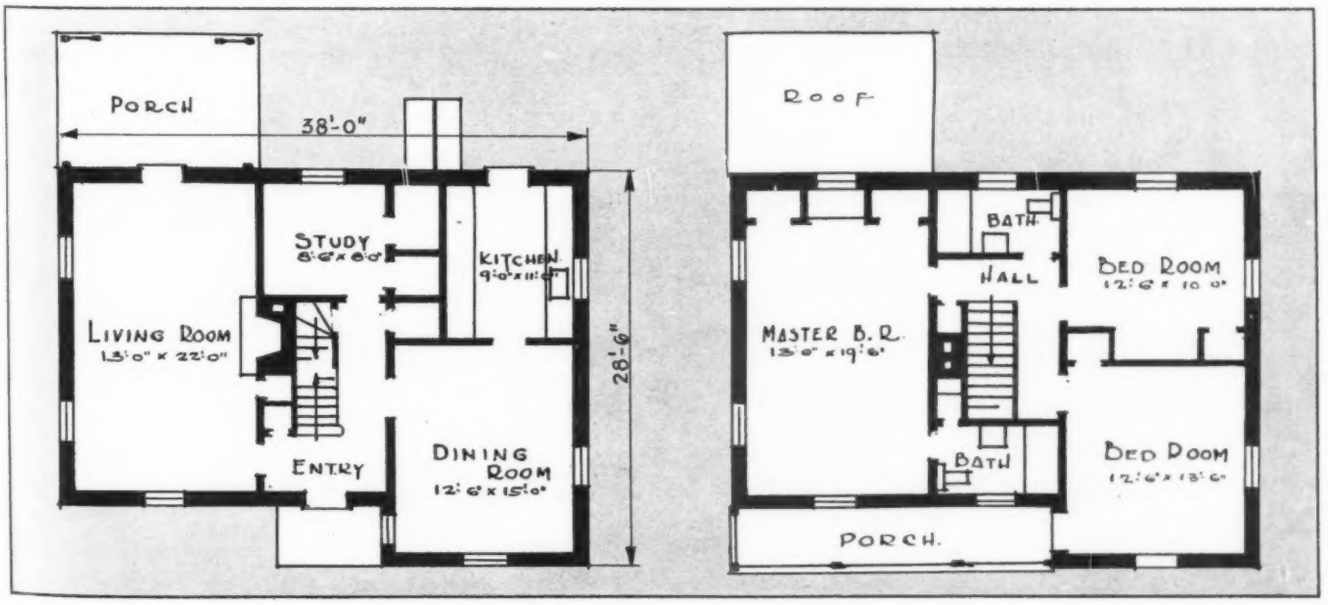
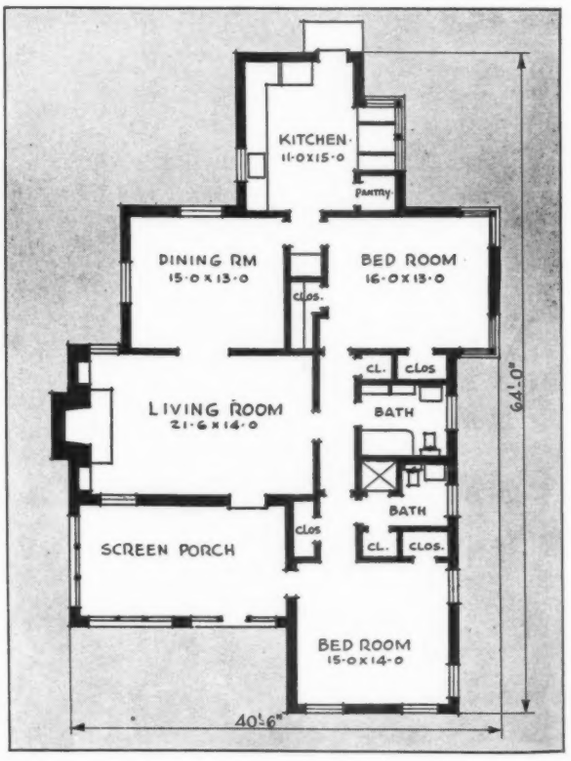


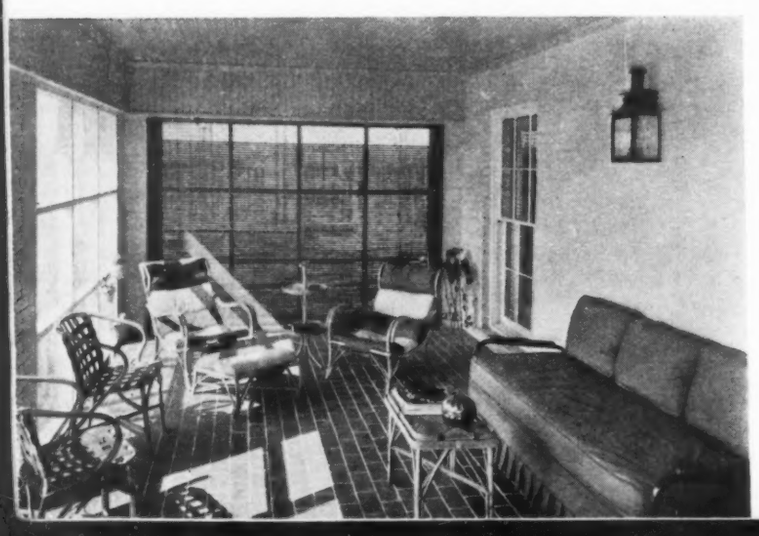
TEXAS BUILDER FEATURES ALL-ELECTRIC KITCHEN

STREAMLINED UNIT KITCHEN in Dallas house.

HUGH PRATHER of Dallas, Tex., built this attractive home, with its comfortable front porch and modern kitchen. There are 2 baths skillfully arranged to serve the 2 bedrooms, one of which has an outside entrance to the porch. Kitchen equipment includes G-E unit cabinets, dishwasher, ventilating fan, range and sink with garbage disposal unit.



COOL AND INVITING PORCH with a tile floor.



5-ROOM COLONIAL FROM CEDAR RAPIDS, IOWA

THIS ATTRACTIVE CENTER HALL Colonial with a 12′ x 25′ living room was built in Cedar Rapids, Iowa, by Edw. D. Monilaw, from plans by V. E. White and the Home Lumber Co. It has a kitchen with the equipment efficiently arranged. The attached garage is equipped with a National No. 900 overhead-type door. Exterior shingles are No. 1 red cedar. Other materials include Celotex Vaporseal sheathing on side walls, Andersen frames, Kohler plumbing fixtures and Armstrong linoleum.

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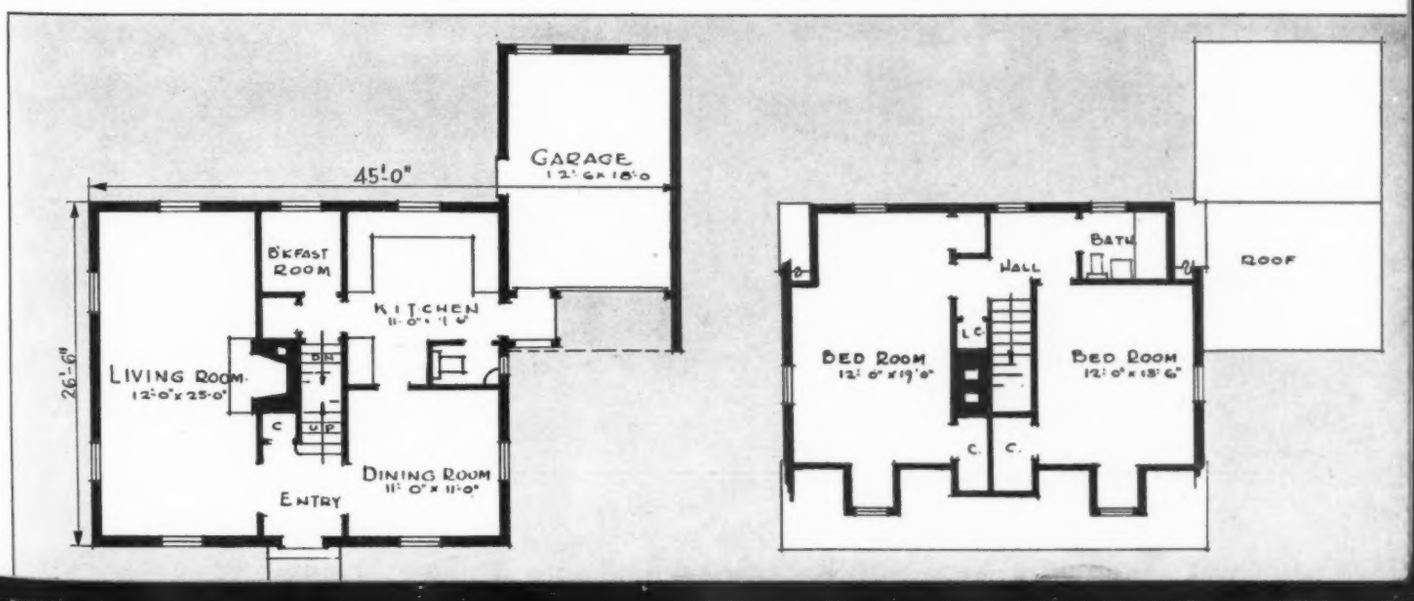

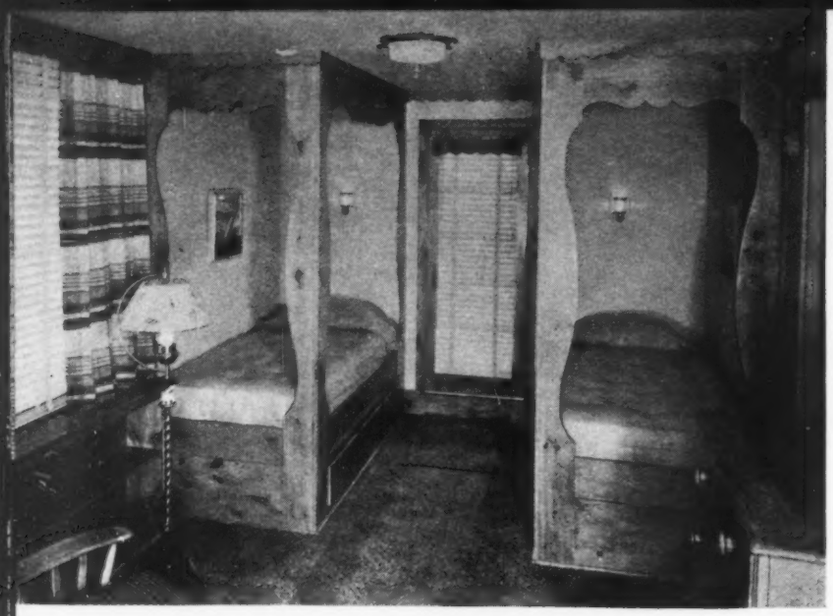

BOY'S ROOM with substantial built-in bunks

LIVABILITY IS KEY TO ST. PAUL HOME

IN ADDITION to the technical requirements making for sound and economical construction, the General Electric better home contest set up requirements that aim to give comfort, charm, health, relaxation and freedom to the modern home owner. The accompanying house built by T. F. Chapman of St. Paul, from plans by Architect M. C. Sundin, fits many of these requirements. It has spacious, well lighted rooms, an attractive screened porch (not shown on plan), a scientific unit kitchen, with space for a breakfast table before a pair of attractive windows. The house is insulated with 1" Balsam Wool blanket-type insulation. The boy's room, illustrated at left, has a pair of substantial built-in bunks with space for blankets or toys underneath.

THE KITCHEN illustrated at left is built of standard General Electric metal cabinets and units, including a refrigerator, range, dishwasher and sink with garbage disposal. Other electric equipment includes a ventilating fan, clock, mixer, washer and ironer.

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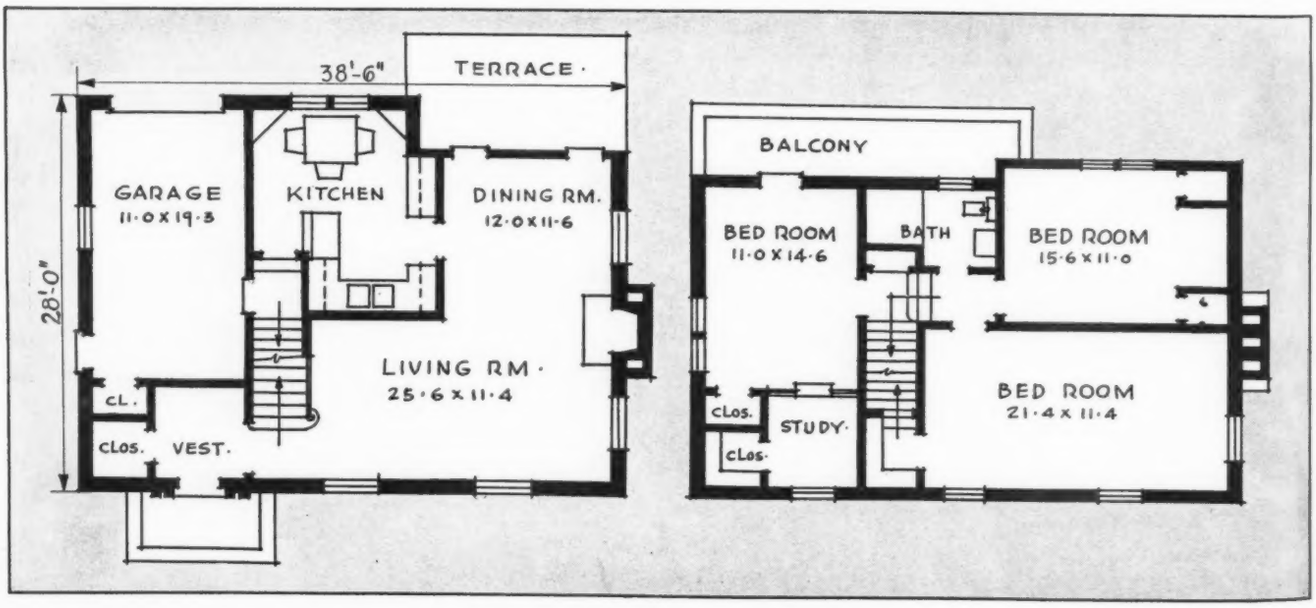
STUDY AND CLOSET off 2nd floor bedroom is an attractive feature of this plan. Kitchen-alcove arrangement is good.

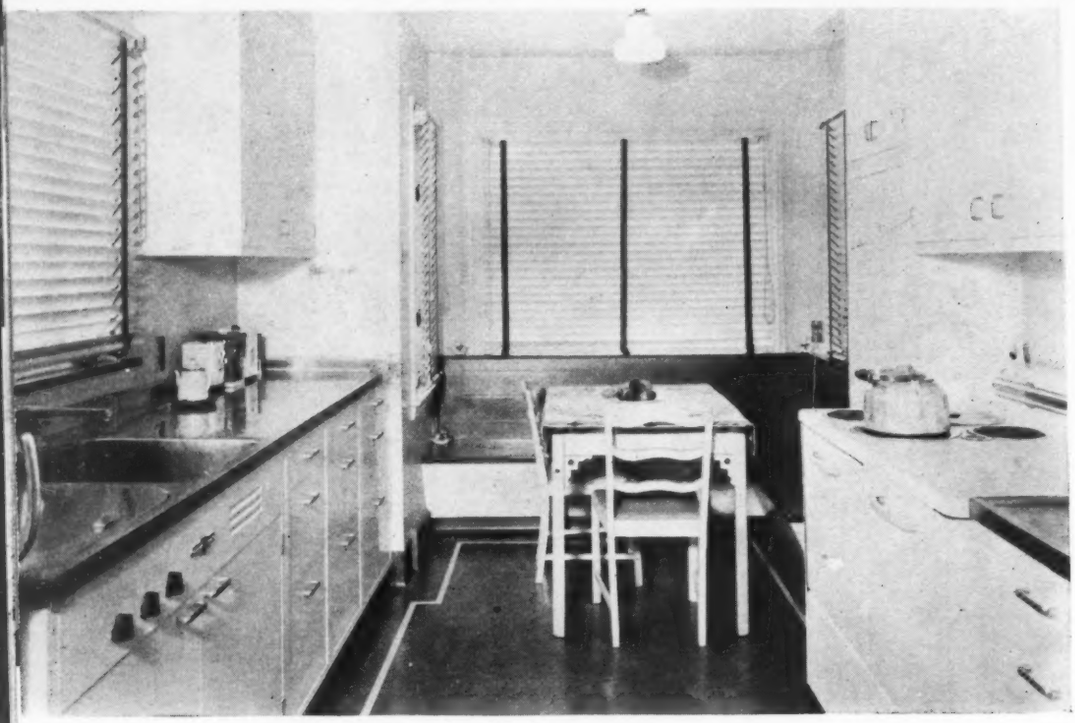


SUBSTANTIAL 8-ROOM BRICK HOUSE in St. Paul, Minn., built by T. F. Chapman.

OLD HAYMOW IN A MODERN BASEMENT

THE BASEMENT "RELAXATION ROOM" of the Chapman house in St. Paul has been cleverly fixed up to resemble the old haymow. The lantern and old-time reflector lights are wired for modern electric service. The painting on the wall framed by the wooden fence depicts an idyl ic farmyard scene for a background.

THE FLOOR is covered with linoleum which resembles plank flooring. Real hay suspended from the first floor joists gives a real farm atmosphere.



RADIAL WIRING ADDS TO SALES APPEAL

REID CONSTRUCTION CO. of Detroit installed the latest type radial wiring system in this home to accommodate the growing list of electrical devices and conveniences demanded by the modern home owner. A G-E circuit breaker is also included. The house is of substantial brick construction, insulated with mineral wool, heated with an oil-fired winter air conditioning.

FLOOR PLAN provides an attractive library and lavatory off the hall. The living room is 14'6" x 20', and its spaciousness is increased by the 11' x 10' dining bay. There is an enclosed porch at rear with a canvas covered, second-floor deck, reached by French doors leading from the master bedroom. Kitchen is equipped with electric range, dishwasher and garbage disposal unit in sink.

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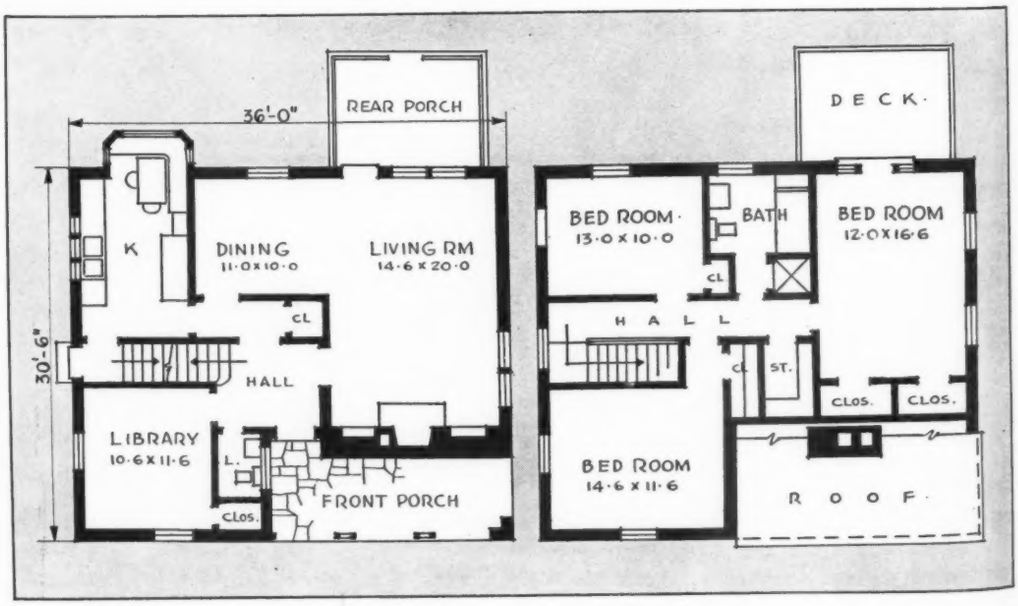
CHEERFUL DINING ALCOVE

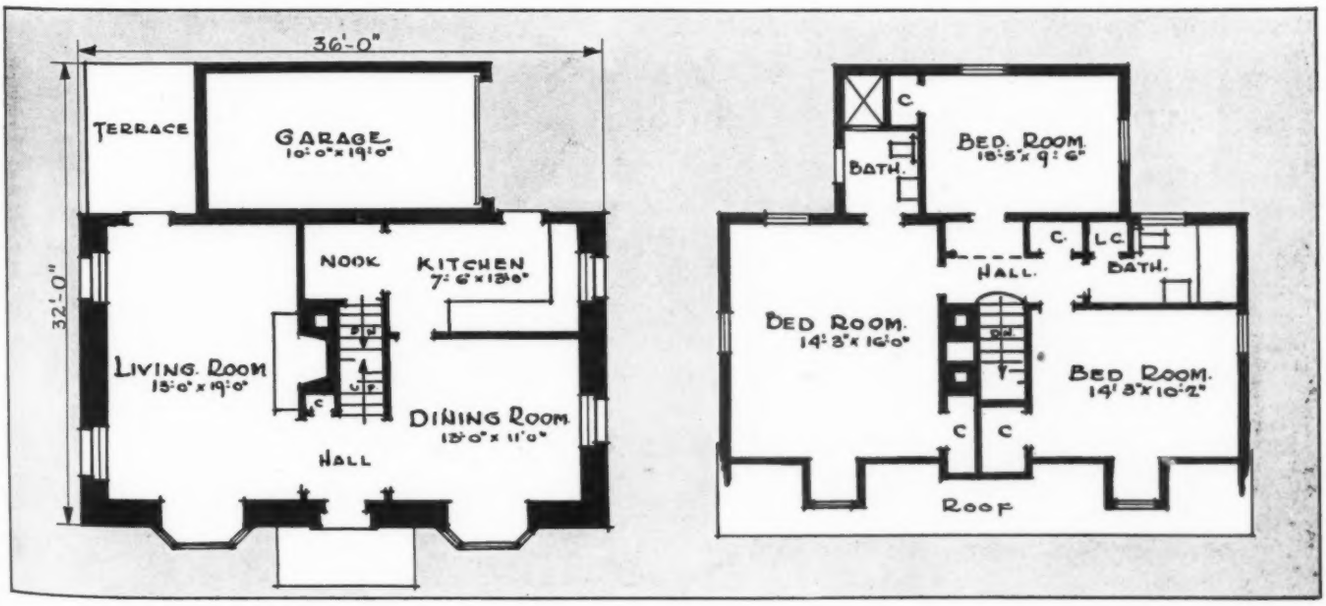
THE TREND towards dining alcoves as part of the attractive modern kitchen is again illustrated by the above picture. FLOOR PLAN at right shows how the built-in alcove seat is handled. The alcove is well lighted on 3 sides.



COMPLETE KITCHEN UNIT (above) is installed in basement of Maguire-built house. BELOW is main kitchen equipped with standard units.

STANDARDIZATION has become an important feature of kitchen planning and equipment, the large number of operative builders houses entered in the G-E Home Building Contest shows. Illustrated above is a Germantown house near Philadelphia built by Daniel J. Maguire. It is a substantial stone structure equipped with a G-E oil furnace, refrigerator, range, cabinets and fan. The floor plan is compact and efficient, with a 13′ x 19′ living room and a 14′3″ x 16′ master bedroom with private bath. The third bedroom is economically placed over garage. Architect is H. G. Schoppe.

OPERATIVE BUILDERS PICK STANDARD UNITS



SPACIOUS AND ATTRACTIVE living room 15′ x 24′. with a large picture window at one end, is an outstanding feature of this Palm Beach home built by J. S. Willson. It has exposure on 3 sides, is 2 stories in height.

OUTDOOR LIVING is made feasible by the Florida climate and with the attractive loggia shown below.

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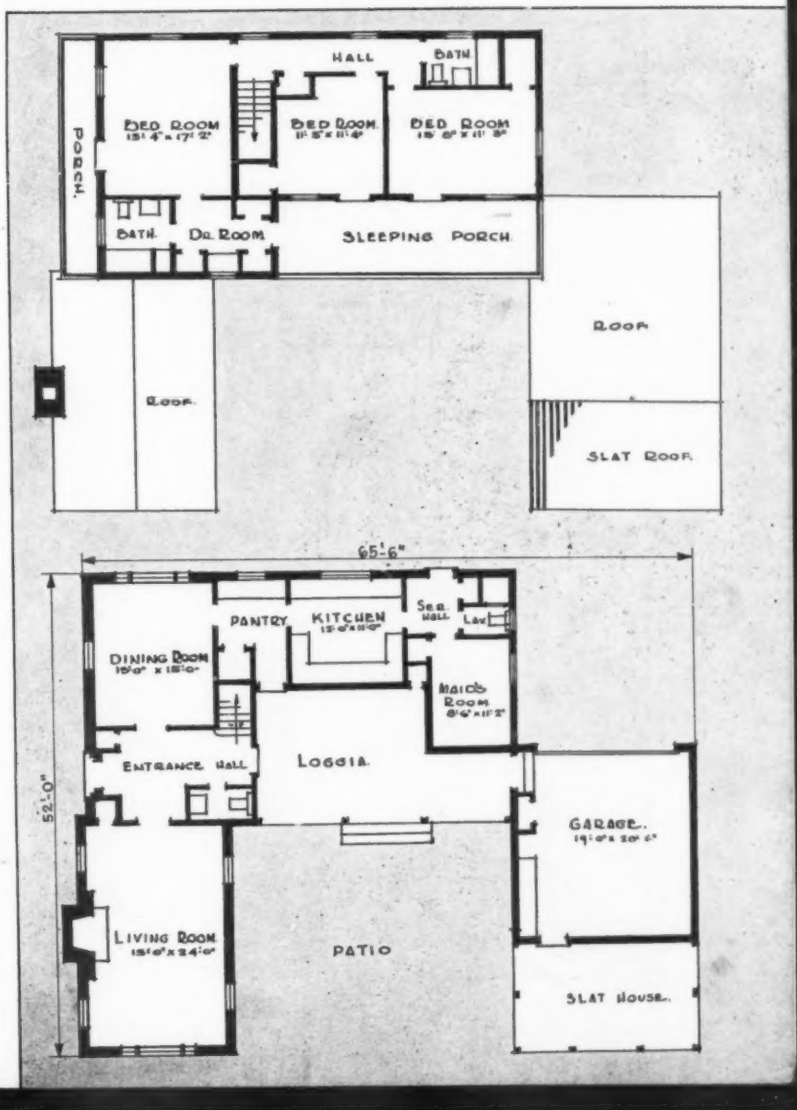
BALCONIES AND LOGGIA FEATURE FLORIDA HOUSE

Jack S. Willson, Builder

John S. Lawson, Architect

AN UNUSUAL but most attractive plan is achieved in this Palm Beach, Fla., house in which patio, loggia and overhanging balconies play a most important part. The U-shaped structure encloses the patio and loggia, assuring complete privacy. The room arrangement upstairs provides good cross ventilation. The long sleeping porch connecting with the dressing room from the master bedroom is an attractive feature.



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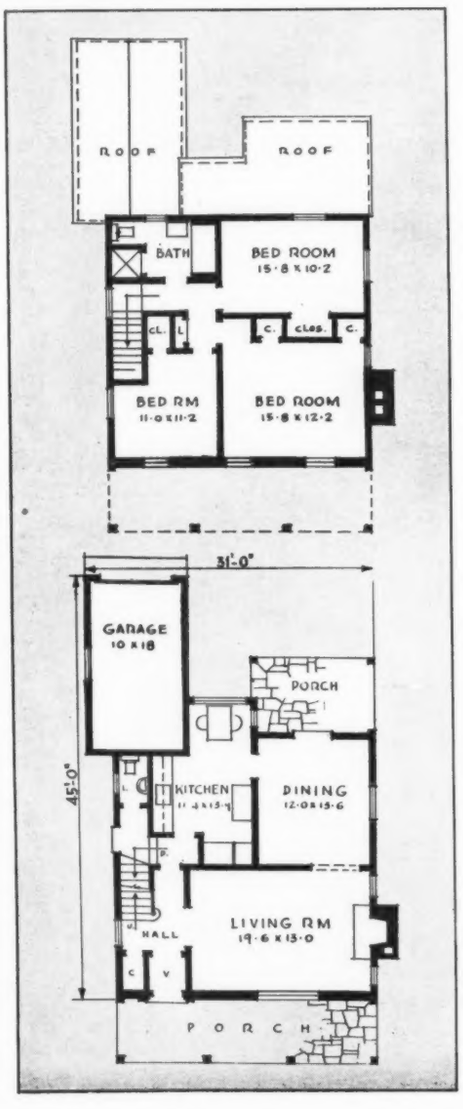
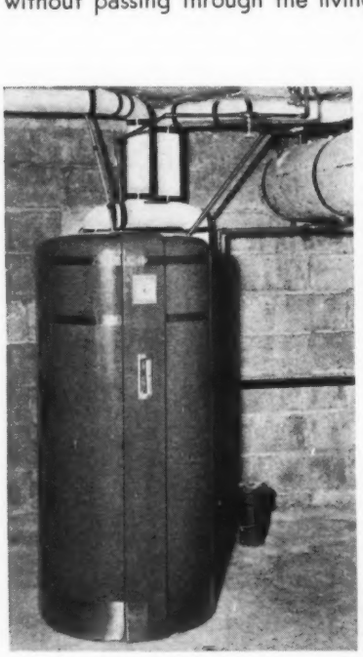


SOLD FOR CASH BECAUSE WIFE LIKED THE KITCHEN

MONTCLAIR BUILDERS, INC., sold this speculatively built house for cash shortly after it was open, and give a large amount of credit to the completely equipped electric kitchen with its attractive dining alcove. The house has a compact and livable floor plan with a 19'6" x 13' living room, 12' x 13'6" dining room opening on a porch, attached garage and downstairs lavatory. The side entrance and rear hall arrangement is good and provides good access to the front door from the back of the house without passing through the living room. Architect was Frederick Kern.



OIL-BURNING boiler and unit kitchen installed by Montclair Builders.

PruCost Figures for American Builder Homes

HOME DESIGNS ON PAGES AS NUMBERED

Unit of Construction	Mar., 50	Mar., 52	Mar., 53	Mar., 54	Mar., 56	Mar., 57	Mar., 58
Basement Walls, lin. ft.	139	188	0	202	152	133	0
Trench Walls, lin. ft.	0	0	165	92	60	34	241
Basement Floor, sq. ft.	1156	1420	0	1612	1020	975	0
Garage Floor, sq. ft.	(c)	0	220	400	320	0	0
Excavation per ft. deep, cu. yds.	48	59	22	74	49	43	18
HoltRate on following items	1.187	1.740	1.198	3.160	2.212	1.897	1.736
Outside Walls, squares	16.2	20.4	16.5	43.9	29.4	25.5	23.4
First Floor, squares	11.6	14.2	9.2	16.1	10.6	9.8	15.3
Second Floor, with Fin. Flg., sqs.	0	4.2	0	15.6	9.4	9.8	0
Second Floor, without Fin. Flg., sqs.	0	3.4	0	0	0	0	0
Ceiling, sqs.	11.6	14.2	11.4	16.1	13.9	9.8	15.3
Roof Pitch, inches rise per ft. run	8″	10″	9″	8″	7″	6″	6″
Roof, squares	14.8	19.7	15.3	25.8	15.9	12.6	22.9
Hips and Valleys, lin. ft.	0	126	108	48	60	21	86
Cornice, Type and lin. ft.	C & F-173	6″-238	6″-170	C & F-304	C & F-220	C & F-146	C & F-130
Cornice, type and lin. ft.	0	0	0	0	0	0	24″-103
Partition, lin. ft.	142	208	128	390	281	234	171
Inside Finish OS Walls, lin. ft.	139	208	165	444	304	266	209
Front and OS French Doors, opgs.	2	2	1	3	3	3	2
Rear and Grade Doors, opgs.	1	1	2	2	2	1	1
Garage Doors 8 ft. wide	(c)	0	1	2	2	0	0
Inside Doors and Cased Opgs., opgs.	15	22	10	36	24	21	16
Windows and Casements, opgs.	10	17	15	38	24	18	18
Gable Sash and Louvers, opgs.	2	0	0	2	0	2	5
Chimney, lin. ft.	30	28	28	36	36	34	26
Main Stairs	0	1	0	1	1	1	0
Porch Floor, sqs.	(c)	0	(b)	2.4	0	2.5	2.4
Porch Ceilings, sqs.	(c)	0	(b)	2.4	0	3.6	2.4
Porch Beam, lin. ft.	(c)	0	(b)	32	0	63	32
Porch and Balcony Post and Newels, No.	(c)	0	(b)	3	0	7	2
Porch Roof, sqs.	(c)	0	(b)	2.7	0	1.8	(a)
Porch Cornice, lin. ft.	(c)	0	(b)	34	0	40	(a)
Porch and Deck Rail, lin. ft.	(c)	0	0	0	0	30	0

HOME DESIGNS ON PAGES AS NUMBERED

Unit of Construction	Mar., 59	Mar., 60	Mar., 62	Mar., 63	Mar., 65	Mar., 66
Basement Walls, lin. ft.	117	133	140	116	0	120
Trench Walls, lin. ft.	60	74	59	40	261	110
Basement Floor, sq. ft.	848	780	982	792	0	792
Garage Floor, sq. ft.	300	240	0	200	420	209
Excavation per ft. deep, cu. yds.	40	39	45	17	19	42
HoltRate on following items	1.610	1.802	1.900	1.705	2.790	1.788
Outside Walls, squares	23.5	26.1	24.8	24.3	39.2	26.6
First Floor, squares	8.5	7.8	9.8	7.9	16.5	7.9
Second Floor, with Fin. Flg., sqs.	6.9	9.2	9.6	8.1	12.4	7.3
Second Floor, without Fin. Flg., sqs.	1.6	0	0	1.8	0	0
Ceiling, sqs.	8.5	10.2	9.8	9.9	20.7	10.0
Roof Pitch, inches rise per ft. run	12″	9″	8″	14″	1″-5″	8″
Roof, squares	16.3	14.2	14.4	16.7	22.0	12.7
Hips and Valleys, lin. ft.	20	0	26	54	0	0
Cornice, Type and lin. ft.	C & F-291	C & F-70	C & F-166	24″-38	C & F-290	C & F-194
Cornice, type and lin. ft.	0	12″-80	0	C & F-176	0	0
Partition, lin. ft.	180	202	204	198	345	197
Inside Finish OS Walls, lin. ft.	246	258	254	236	407	260
Front and OS French Doors, opgs.	1	3	3	2	6	2
Rear and Grade Doors, opgs.	3	2	1	1	2	1
Garage Doors 8 ft. wide	1	1	0	1	2	1
Inside Doors and Cased Opgs., opgs.	15	17	18	16	28	17
Windows and Casements, opgs.	18	16	24	19	25	18
Gable Sash and Louvers, opgs.	2	1	0	2	0	2
Chimney, lin. ft.	32	36	36	36	32	36
Main Stairs	1	1	1	1	1	1
Porch Floor, sqs.	0	1.2	2.6	0	1.1	2.9
Porch Ceilings, sqs.	0	1.2	2.6	0	1.1	2.9
Porch Beam, lin. ft.	0	32	59	0	58	66
Porch and Balcony Post and Newels, No.	0	8	9	0	8	(b)
Porch Roof, sqs.	0	2.5	1.4	0	(a)	3.3
Porch Cornice, lin. ft.	0	36	34	0	(a)	70
Porch and Deck Rail, lin. ft.	0	32	32	0	31	42

(a)—Included with main roof and cornice. (b)—Omitted in HoltRate on account of being so special. (c)—Not including garage and pergola leading thereto.

Necessary Home Equipment, Fixtures, Accessories, Extras

Since the above surveyed items cover only the actual superstructure of the house, you should figure and add the following items as specified or wanted (and don't forget Overhead and Profit):

Areaways, Cellar Sash, Coal Chute, Basement Partitions & Doors, Attic Flooring, Attic Stairs, Blinds, Gutters & Downspouts, Fireplaces, Built-in Cabinets, Rail & Newels for Stairs and Stair Well, Beamed Ceiling, Weatherstrips, Tile Work, Plumbing, Heating & Air Conditioning, Lighting, Terraces, Patio Walls or Fences, Sidewalks including Porch Steps, Driveways, Unattached Garages. Also add for painting and decorating if not included in Unit Costs.

A "Master Sheet" for TruCost

Reg. U.S. Pat. Off.

A. W. HOLT Offers Simple Estimating Form and Illustrates Its Use with an Analysis of "Holt's Basic House"

EVERY now and then some estimator tells me that the only estimates he will rely on are his own detailed lists. That's good. Self-confidence is a great thing. But when he claims that his estimates always check out within a few dollars of completed costs I am reminded of the old saying, "Figures don't lie but liars will figure." It's easy to make the books balance if one juggles figures such as charging a few extras on a job that is already short to one that is over.

Whenever the human equation is involved there can be no such thing as infallibility. Practically everyone I visit acknowledges that he is never sure how he will check out until the job is about finished. And most of them attribute errors and omissions to lack of system and positive cross-checking—"check and double-check," as Andy says.

Before presenting a "master sheet" that will eliminate omissions of whole items and, in so doing, re-explain "HoltRates" given as the sixth item of *TruCost* tables, I must relate an experience a short time ago while visiting with a lumberman friend on the mezzanine of a hotel where a convention was being held. It exemplifies how the human equation promotes or retards acceptance of *TruCost*.

After my friend and I had visited a few minutes two lumber dealers, strangers to us, took seats nearby and I was prompted to listen when one of them said, "Now tell me more about your system of selling houses and how you manage to sell the complete home without offending your contractors," whereupon his friend replied about as follows:

"It all started when a very good contractor friend of mine lost his shirt on a ten thousand dollar house last summer. He's a wonderful fellow and enjoys an enviable reputation as a builder. But he doesn't like detail work. He hadn't kept records of his costs as he should and had no system whatever. I don't know where he went wrong because I couldn't make head or tail out of his original estimate. As so frequently happens, I had to help absorb part of his loss by granting a discount. But I decided then and there that I was going to do something to protect him as well as myself.

Finds Solution in TruCost System

"You may have noticed the *TruCost* articles that *American Builder* started last year [then I was interested, but, since I had been sitting there first, I felt I was not eavesdropping] for estimating one's own cost of homes. I hadn't paid so much attention to them until my contractor friend cost me money. I'd always tried to steer clear of infringing on what I considered to be their business. But now their business is my business because their interests are my interests.

"After digging up a few back numbers of *American Builder* I could see where *TruCost* might be the solution to our estimating problems. I lined it up for the materials and then sat down with my contractor friend and we worked out the labor end together. To make a long story short, together we've worked out our own unit costs and have proved them by a couple of sales we made by *TruCost* last fall. We're organized to prevent any more slop-overs and I've gotten several other contractors to adopt this *TruCost* system of figuring in units. There's nothing else like it."

My friend had been listening and after those two lumber dealers left I turned to him and said, "There you have it, George; he gave *TruCost* a try and did his part. Suppose his skepticism had ruled his judgment and he had done as so many by charging his loss on that job to the account of 'TuffLuk' and hoped his contractor would pan out better on the next job."

A "Master Sheet" for Estimating

TruCost is a scientific though simple system of estimating the cost of manufacturing homes on a unit-cost basis. My previous articles have dealt in unit costs and this one presents a form that will summarize the units that may be required to manufacture a proposed home. This serves the same purpose as a check-list to estimators who still count pieces. Instead of dealing in joists, bridging, subfloor, etc., this form simply lists each floor as a unit. When figuring one story homes, no extension is made for the second floor unit; spaces for including porch units are left blank when the plan does not include a porch. By studying this *TruCost* form item by item and then reading the explanation of all figures involved in *TruCosting* this simple "Holt's Basic House" (see plan on page 70) anyone can see how he can figure any special house with assured accuracy.

First of all, one's standard specifications are supposed to be typed or printed on a separate sheet and only the variations from that standard shown for each house figured. This saves time and each user will know what his standard is or can readily refresh his memory by reference to his unit cost tabulations. Although the variations from standard could be listed according to one's code, it is usually best to write these out, as is done on this specimen form, because it is practically impossible to remember the code for all alternate materials.

All unit prices given are arbitrary for illustrative purposes only and the calculations of unit areas given in the space provided (circled letters) will be referred to as each item of this specimen is explained.

Since *TruCost* is based on actual surface measurements, the same as detailed lists of materials, the first step should always be to determine the perimeter of the building and the area of the first floor because these are basic in computing unit areas of the roof and cornice as well as most horizontal or vertical planes that encompass a house or any other building.

The Perimeter equals 24 plus 38 multipled by 2 or 124 linear feet, as shown by (A). This is based on outside dimensions and it is a simple matter to make modifications for net inside dimensions, if desired.

The Floor Area was figured at (B) by multiplying 24 by 38 feet. This is also based on outside dimensions.

Excavation is the first item listed on this form and is computed at (C) by adding the perimeter to the floor area for the superficial area of the excavation a foot

TruCost Reg. U.S. Pat. Off. FOR MR. March American Builder

ADDRESS _____ PHONE _____

PLAN NO. Holt's Basic House SIZE 24×38 ROOF PITCH 5/12 CORNICE C&F

STANDARD SPECIFICATIONS EXCEPT AS LISTED	UNITS	PRICE	AMOUNT
EXCAVATION & CLEARING LOT — 38×5' deep	190 yds	46¢	
FOUNDATION & DRAIN TILE — 10"-7' on 16×8 ftg	124 LIN. FT.	2.80	
BASEMENT FLOOR — 4" on cinder fill	912 SQ. FT.	16¢	
GARAGE FLOOR	— SQ. FT.		
OS WALLS — Dbl course Agleq	14.2 SQS.	31.50	447 30
FIRST FLOOR — Lino in Kitchen	9.1 SQS.	42.30	384 93
SECOND FLOOR WITH FIN. FLG.	0 SQS.		—
SECOND FLOOR WITHOUT FIN. FLG.	0 SQS.		—
CEILING	9.1 SQS.	17.10	155 61
ATTIC FLOOR WITH STAIRS — Extra if wanted	0 SQS.		—
ROOF	12.7 SQS.	21.60	274 32
HIPS AND VALLEYS	0 LIN. FT.		—
CORNICE	140 LIN. FT.	27¢	37 80
PART'N	120 LIN. FT.	2.07	248 40
IS FINISH OS WALLS	124 LIN. FT.	1.26	156 24
FRONT AND OS FRENCH DOORS	1 OPGS.	45-	45 -
REAR AND GRADE DOORS	1 OPGS.	36-	36 -
GARAGE DOORS & HARDWARE	0 OPGS.		—
IS DOORS & CASED OPGS.	10 OPGS.	18	180 00
WINDOWS	12 OPGS.	22.50	270 -
CASEMENT OR SPECIAL SASH	0 OPGS.		—
GABLE SASH & LOUVRES	1 OPGS.	9.00	9 -
CHIMNEY & FIREPLACE — (I) 2,339.10	30 LIN. FT.	3.15	94 50
BUILT-IN CABINETS AS LISTED ON OTHER SIDE			
MAIN STAIRS, NEWELS & RAIL			
PORCH FLOOR	SQS.		
PORCH CEILING	SQS.		
PORCH BEAM	LIN. FT.		
PORCH POST & COLUMNS	PCS.		
PORCH ROOF	SQS.		
PORCH CORNICE	LIN. FT.		
PORCH RAIL WITH SASH & SCREENS	LIN. FT.		
BALCONY RAIL & NEWELS	LIN. FT.		
BASEMENT PART'N WITH ____ DOORS	LIN. FT		
TILE FOR VEST. & BATH			
ELECTRIC WIRING ____ FIXTURES			
PLUMBING			
HEATING & AIR CONDITIONING			
TERRACES, PCH. STEPS, SIDEWALKS & DRIVEWAY			
GARAGE, IF SEPARATE			
GUTTERS & DOWNSPOUTS			
PERMIT, INS., BOND, ETC.			
TOTAL PRICE			

USE THIS SPACE FOR COMPUTING AREAS

24 × 38 = 912 (A)

38 × 24 = 912 (B)

912 + 124 = 1036 (C)

1036 ÷ 27 = 38.4

124 × 9½ = 1116 (D)

912 + 62 = 974 (E)

974 × 30% = 292

912 + 292 = 1266

24 × 5 = 120 (G)

124 × 48 × 30% = 140 (F)

18 × 10 × 2 = 30 (H)

1116 + 62 = 1178

1178 − 240 − 28 10/24 = 1418

A. W. HOLT offers this simple estimating form or "master sheet" for *TruCost* tabulations. The figures used here apply to "Holt's Basic House" as illustrated on the next page.

larger than the house. This provides space for forms or laying up blocks. In case the soil permits eliminating the outside forms for concrete the extra time to keep the walls true will cost as much as removing more dirt. So *TruCost* always figures excavation in cubic yards per foot deep by dividing the square feet of area by the 27 cubic feet in a cubic yard. This is called 38 and at the assumed depth of 5 feet totals 190 yards of excavating.

Foundations always equal the perimeter, but when part is unexcavated, as for attached garages or porches, part of the foundation may be figured as trench walls to extend below the frost line only. This is given by referring to the perimeter (A).

Basement Floor is given by (B) unless one wishes to deduct for the thickness of foundation walls, in which case the perimeter (A) multiplied by the thickness of foundation walls IN FEET gives the net inside surface. If the foundation walls are 12 inches thick, deduct the linear feet of perimeter; if 10 inches, deduct five sixths and if 8 inches, deduct two thirds of the perimeter.

Outside Walls. The calculations are shown at (D) by multiplying 124 linear feet by 9'6" high for 8' studs plus box sill and double plates. Being 5/12 pitch, 5/12 of the 24 foot span gives 10 feet as the height from plates to ridge and both gables add 10 x 24 or 240 square feet of wall surface. By showing this as "2G-10/24" one can refer to this when figuring the cornice and chimney.

Roof. The 12.7 squares shown at (E) was derived by adding 124 linear feet of 6 inch roof projection outside of the walls to the floor area of 912 square feet inside and then adding 30 percent, which is constant for 5/12 pitch roofs. By memorizing "12, 20, 30, 42 and 54" as the percentages to add for roofs of 6, 8, 10, 12 and 14 inch rise per foot it is not necessary to refer to any of the many tables and roof gauges that are available. Had this been a hip roof or a three-gabled roof, the linear feet of hips and valleys would have been computed by adding 30 percent to the "run" (one half the span) as the length of the common rafters (called 16 feet) and then add 26 percent as the additional length of hips for this 5/12 pitch roof for 20 linear feet of each hip or full-length valley.

Cornice is computed at (F) and always equals the perimeter (A) plus the roof percentage of the total width of all gables, because the cornice for the gables is as much longer than the horizontal as the rafters are than their run. This was called 16 or a trifle more than 30 percent of 48 to allow for measuring the cornice at the eaves and simplify multiplying by 140 linear feet.

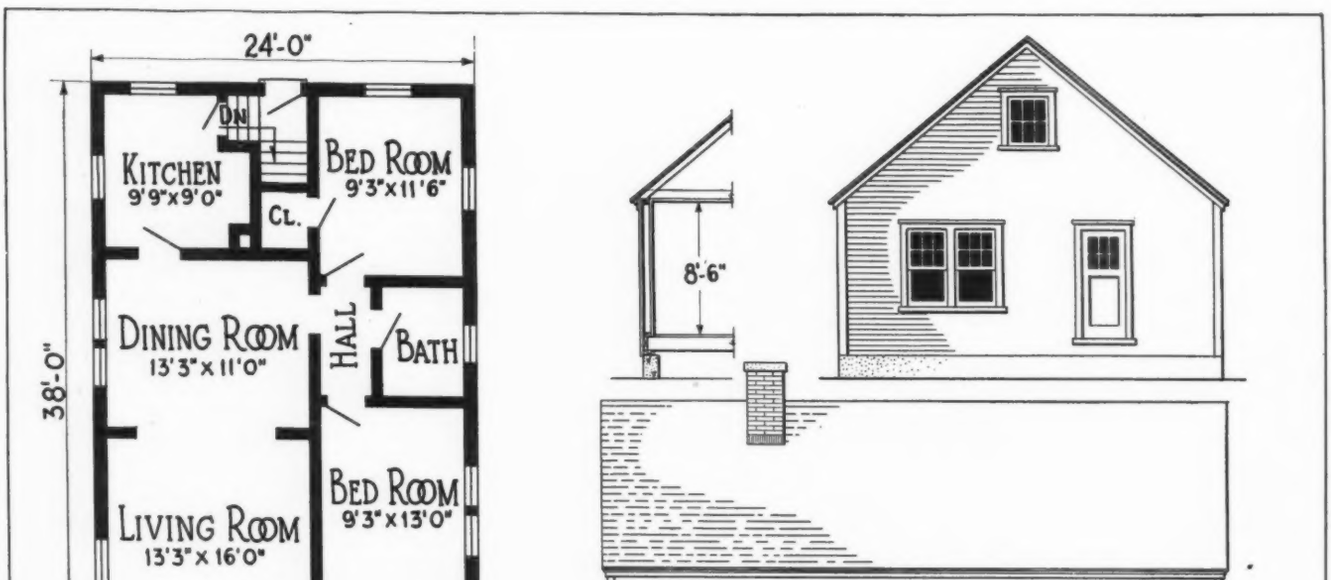
System Avoids Missing Any Partitions

Partitions are listed as linear feet at (G) by listing the cross partitions first and then those running lengthwise or up-and-down on the plan as shown. Always do this and avoid missing any. Besides it's easier to list them on the basis of the outside dimensions and, if necessary, approximate the minor partitions such as "5" for the partitions "below" the cellar stairs instead of "2" and "3." Until I adopted this system of listing partitions I had to check partitions several times before I was certain of my survey.

Inside Finish of Outside Walls. This always equals the perimeter (A) for the first story. For full two-story houses the second floor requires the same minus the two sides of all one-story projections.

Chimney. The length is listed at (H) as 18 feet from the basement floor to the plates, 10 feet to the ridge as always given by a glance at gable areas at (D) and 2 feet above the ridge, for a total of 30 feet. This also applies to fireplaces. When a fireplace is wanted and the

(Continued to page 132)



FLOOR PLANS AND ELEVATIONS OF HOLT'S BASIC HOUSE
ONE STORY, ELEVEN MAJOR AND MINOR ROOMS, 24'x38'-8'-6" CEILING, 5/12 PITCH, C&F CORNICE.

"HOLT'S BASIC HOUSE"—See sample estimate of this house on page 69 to illustrate simple method of *TruCost* estimating.

A MODERN CONCRETE MIXER, steel forms, rubber-tired wheelbarrows contribute to lower cost, better quality concrete at Green Park Homes, a successful row house project near Forest Hills, L. I. BELOW Lightweight Safety Saw with plenty of power, equipped with duplex handle for convenience in any position; cuts 2-inch dressed lumber. Scaffold brackets are time and material savers.

No Payroll Taxes On Power Equipment

High Wages, Shorter Hours, Social Security, Accident Insurance Have Direct Bearing on Use. A Brief Survey of Advances in Construction Equipment

THE very laws intended to help and protect workers are having a curiously contradictory effect in that they force the employer of labor to adopt greater and more complete mechanization of every job possible.

Whether he likes it or not, the successful building contractor today is being forced to operate on the basis of fast operation, quick completion and, wherever possible, machine production. For it has already become apparent that the increasing burden imposed by high wages, short hours, social security taxes, industrial insurance payments, to mention only a few, make the old-time easygoing hand operation methods unprofitable. A machine pays no social security tax.

Coupled with the above factors is the driving demand for lower costs through mass production. On a group of houses in which modern cost-cutting, time-saving power equipment is used scientifically, there is an appreciable reduction in cost.

Precutting of lumber on the job, as described in another article in this issue, is a strong trend that involves

CUTTING of window framing with power hand saw is fast and accurate on Hammond, Ind., project even in cold winter weather.

F. J. ROMER COMPANY, St. Paul contractors, saved 75 percent in direct labor cost in cutting out concrete with electric hammers.

not only more scientific use of power equipment but better scheduling and detail of the job.

Analysis of the trends in contractor and building equipment shows great advances in design, construction and efficiency in recent years. There has been an appreciable lowering of initial costs and in operating costs. Greater speed, rugged construction, efficiency and ease of operation have been achieved.

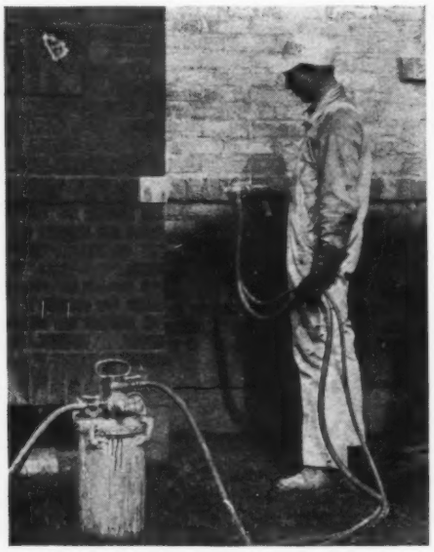
Highlights of the trend show:

CONCRETE MIXERS—Greater enclosure of all parts, streamlining, higher speed, portability, pneumatic tires, ease of handling. CONCRETE HANDLING EQUIPMENT—Plywood and metal forms with quick acting clamping devices allow re-use, less cost of finishing because of smoother job and more accurate placement. Concrete vibrating machines produce denser concrete, either in monolithic or unit form.

HAND POWER SAWS—Introduction of new metals and alloys makes them lighter, stronger, more powerful; bearings and moving parts sealed in oil. TABLE TYPE SAWS—Greater flexibility, speed and ruggedness. They offer portability without sacrifice of efficiency. WOODWORKERS—Highly engineered for a variety of operations, they are lighter, more compact. SANDERS—Vastly improved efficiency, using lighter

TRUCKS with bodies suitable for all building purposes from hauling foundation material to delivering finish equipment have received their share of recent outstanding technical advances in the motor industry.

ELECTRIC HAMMER with concrete drill bit simplifies job of cutting openings in wall.



SPRAY PAINTING cuts time of application at least in half on average job, inside or outside.

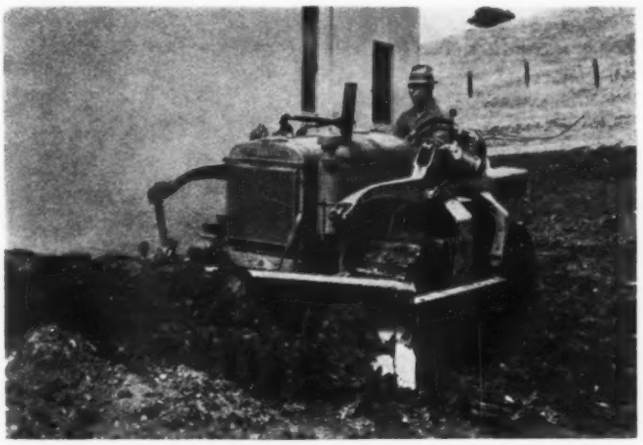
ANGLE DRIVE ATTACHMENT simplifies boring of holes in many hard-to-reach places.

weight, stronger materials, more powerful, rugged motors, lifelong drives and bearings. Supplementing the work of improved drum sanders, disc sanders and spinners do a fast, time-saving job around the edges of floors and in the corners, replacing this tedious handwork. Belt sanders for surfacing trim, doors, etc., are handy, compact and light in weight; usable in any position on all straight or slightly curved surfaces. ELECTRIC DOOR PLANES—For fast, accurate fitting, leave finished surface that does not require scraping or sanding; gives smooth, clean edge, either with or across the grain. SPRAYING MACHINES—Efficient, flexible devices for applying paint, stucco or other finishes on new work or maintenance jobs with speed and uniformity of finish.

TRUCKS AND TIRES—Pneumatic tires, better brakes, more powerful engines, versatility mark new models. EXCAVATORS AND GRADERS—Wide range of models for any type of job. Improved engineering gives speed, clean work and easier handling.

Other important time and cost cutting modern devices include electric mortising machines, weatherstrip groovers, electric drills, hammers, improved tackers for installing blanket-type insulation, cutters and trimmers for wallboards.

PORTABLE GENERATOR supplies current for this electric hand saw on New York World's Fair job; electric supply is usually available.

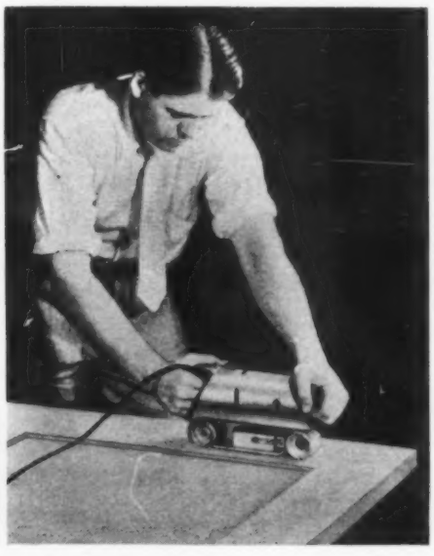


BULLGRADER mounted on a tractor speeds the work of Contractor Ted Oliveira, Lafayette, Calif., on the excavation for the basement of Orinda Public School. Backfilling and grading are also simplified.

ELECTRIC DOOR PLANE leaves smooth, clean edges which do not require further scraping or sanding. Because it can be adjusted to exact depth and bevel, much time is saved in fitting doors and sash.

ROTARY HACK SAW attached to power drill is used on walls to cut holes up to 3½".

DISC SANDER supplements the work of larger floor machines at edges and in corners.



BELT SANDER does a fast job of surfacing and refinishing on wood or other materials.

AIRPLANE VIEW OF LINDEN, N. J., houses nearing completion by Parklap National Builders, Inc. Construction crew started at upper left using garages for storage, ended up at lower right, according to exacting work progress scheduled. Gustave W. Iser, architect.

Power Equipment Speeds 2-Story "Garden Home" Project

Parklap Company Achieves Low Cost in Linden, N. J., Houses Despite High Wages, By Skillful Planning and Scheduling Work

IN THE small suburban town of Linden, N.J., Parklap National Builders are completing a new type of two-story home project that is described by FHA officials as one of the best planned and most forward-looking types of modern rental housing construction in the country today.

Gene W. Hall, the aggressive young president of Parklap also represents a new type of builder in the residential field. An engineer by training, and with a long experience in larger construction, he employs skyscraper building methods, using power equipment, skillful advance detailing, and thorough scheduling of the job.

The Linden houses consist of two-story brick and frame apartment structures attractively grouped around courts and gardens in such a fashion as to make the individual apartments the closest thing to a single family home yet produced as part of a rental project. This is a private enterprise, financed by a large insurance company with a loan insured by FHA. There are 246 three- and four-room apartments which will rent from $45 to $67 a month, including heat and electricity. The houses cover only 26 percent of the ten-acre tract, which leaves ample space for lawns, gardens and playgrounds.

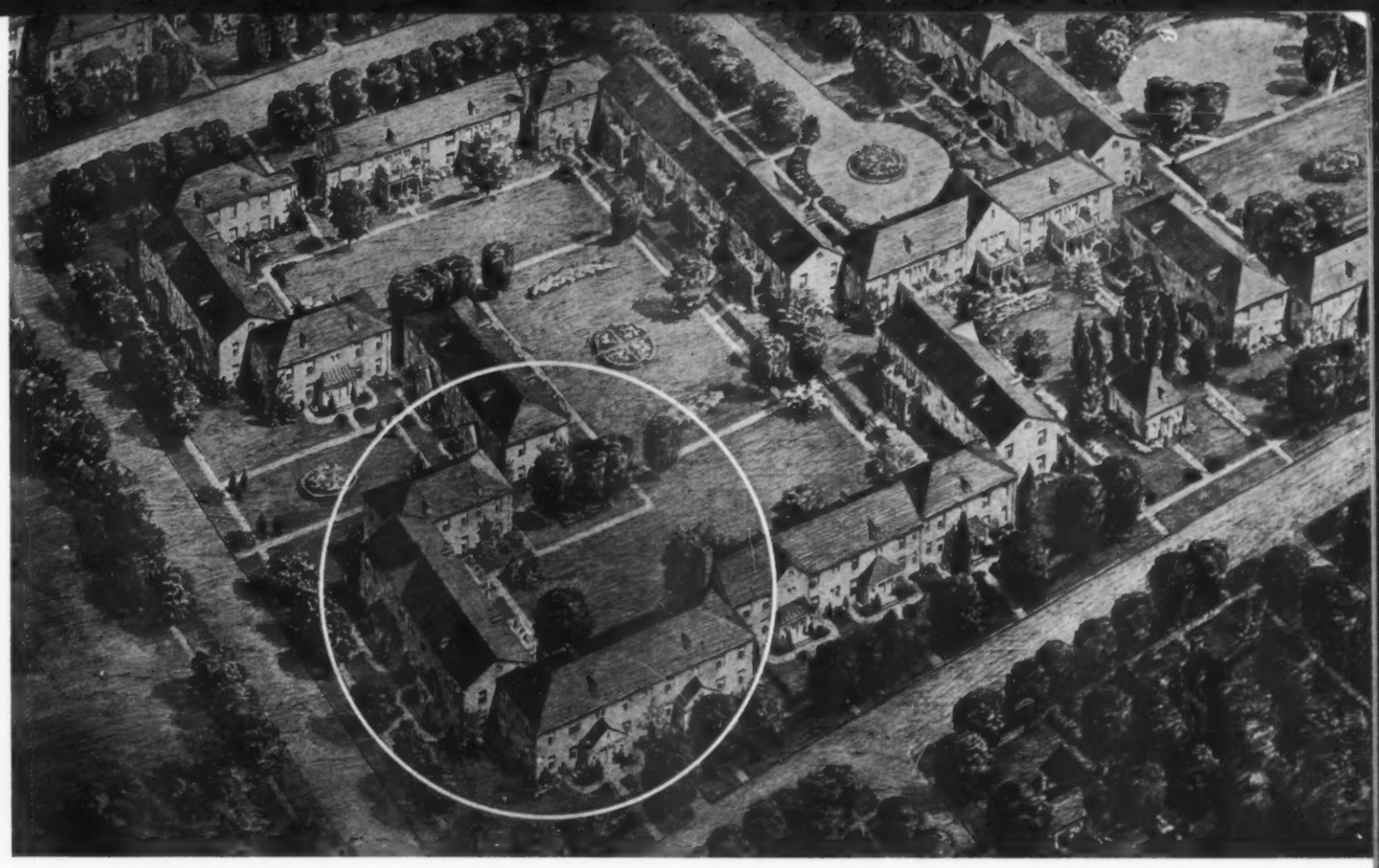
This type of two-story rental house project is considered to represent a great improvement over tall, many-storied apartment buildings crowded into built-up city areas. Each apartment at Lindcrest has its own private front entrance and back porch as well as its own private front and back stairs. It is one of the safest types of housing for children since they play inside the courts and can reach the playgrounds without crossing streets.

The design, layout, and extensive architectural detailing of the Linden houses were done by Architect Gustave W. Iser, of 109 East 29th Street, New York City, who has become a nationally known specialist in projects of this type.

Another significant feature of the Linden project is that it represents a new form of safe investment for idle capital. The Linden Housing Corporation, owners of the project, is a corporation in which funds of several estates are invested. A separate building firm, Parklap National Builders, Inc., does the construction.

Advanced Construction Methods

President Hall of Parklap has brought to this job the latest in modern mass production methods. All cutting of rafters, joists, bridging and other materials is done on a centrally located DeWalt power saw. The time and money saved in cutting the bridging alone on this



GARDENS, LAWNS AND PLAYGROUNDS separate the 2-story Lindcrest buildings, which are arranged in attractive groupings around courts. Each apartment has own front and back stairs and porch. Apartment group enclosed in circle is fully detailed on following pages.

one job has been enough to pay the cost of the saw. Since most of the houses at Lindcrest have hip roofs, the cutting of rafters represented a very large saving.

Under the progress schedule worked out by Gene Hall and his associates the job is highly organized and the movement of materials and production of the various crews laid out in advance. Thus by the time the foundations for a given group of buildings are ready, the power saw operator has the framing cut and ready. It is stacked in piles close to the point of use.

Due to this scientific scheduling of the work it is possible to keep the power saw in operation all the time, doing a job of clean, exact cutting that assures tight fits and no loss of time in erection.

Another important labor and time-saving device used is a Carter electric mortising machine, which makes it possible to hang doors twelve times as fast as was formerly done by hand.

Speed and accuracy are highly important attributes of the Parklap firm's operations. In one month, material requisitions totaled more than $274,000. A crew of 125 brick layers was put to work. Construction started in the structures shown at the upper left corner of the accompanying airplane picture, and the crews worked straight down the rows of buildings, across and back, according to a predetermined schedule.

Much credit for the economy and low cost possible goes to Architect Iser, who laid out the structures in simple standard forms. Long, unbroken runs of brick walls were made possible—in some instances as far as 400 feet without a break. While the basic structural design was simple, architectural charm was achieved by good proportions and by attractive detailing of the gables, entrances and porches.

The buildings are soundly constructed of brick with tile back-up and slate roofs. There are no cellars ex-

Power Saw on the Job

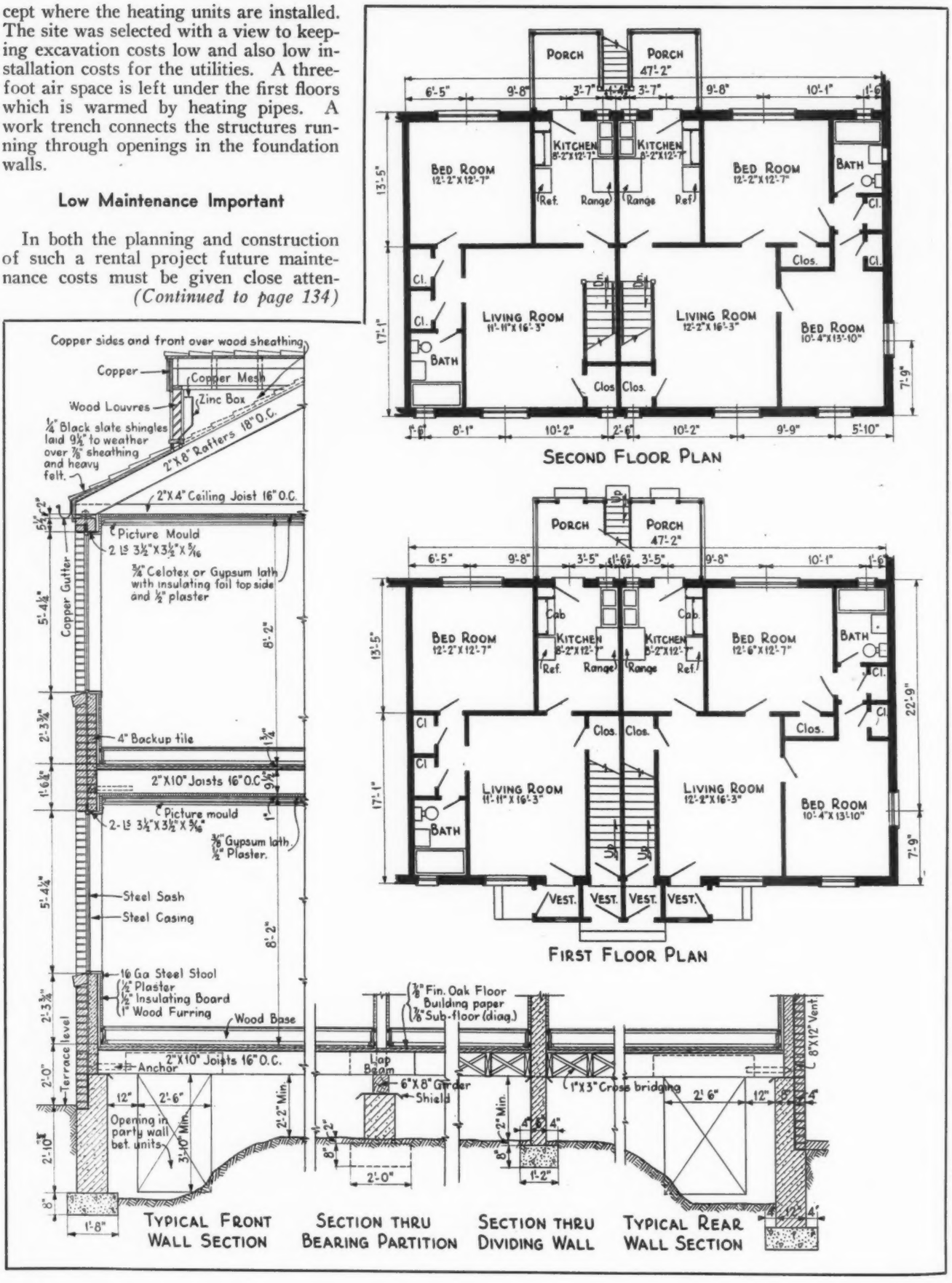
THIS DEWALT SAW was set up near road, kept in constant operation by progress schedule. Rafters and framing members were cut and stacked in proper order for each unit. Large economies were secured in the extensive cutting for hip roof rafters.

cept where the heating units are installed. The site was selected with a view to keeping excavation costs low and also low installation costs for the utilities. A three-foot air space is left under the first floors which is warmed by heating pipes. A work trench connects the structures running through openings in the foundation walls.

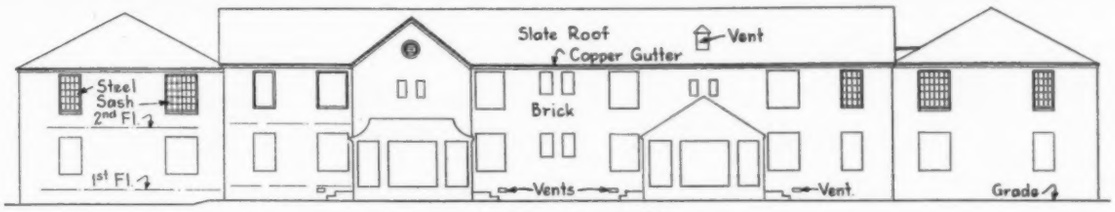
Low Maintenance Important

In both the planning and construction of such a rental project future maintenance costs must be given close atten-

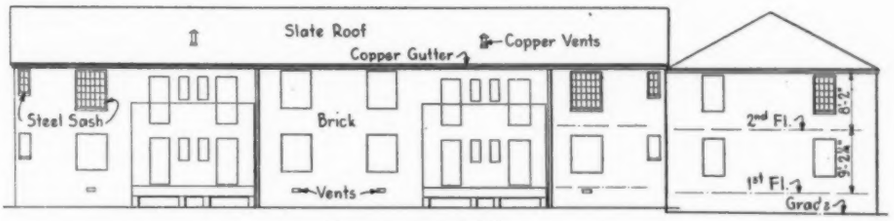
(Continued to page 134)



TYPICAL SECTION above shows brick and tile walls, frame construction, air space under first floor with passage between units, steel window casings, termite shields. **TYPICAL FLOOR PLAN** shows 3 and 4-room apartments, each with own front entrance and individual back porch and stairs. Above plan, used in reverse and with minor variations, was used throughout project.

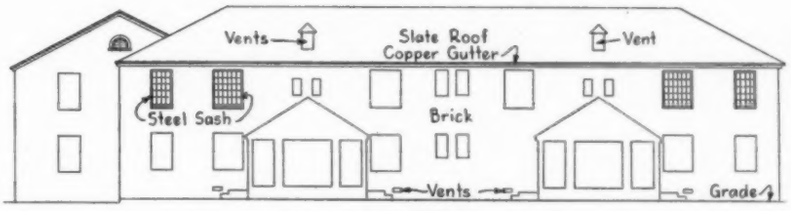


ELEVATION-E.49

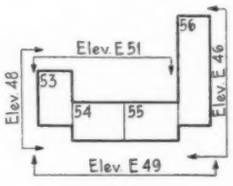


ELEVATION-E.51

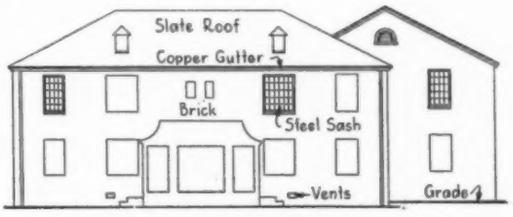
KEY PLAN below shows how a typical group of 2-story apartment structures are grouped around a court to provide good light and air, attractive appearance and economical brick runs. ELEVATIONS AT RIGHT refer to structures shown in key plan, which are also picture in circle on drawing on page 75.



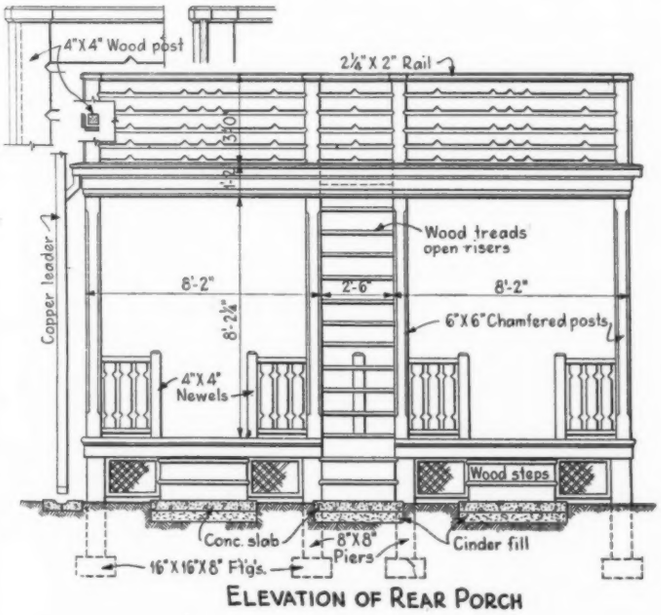
ELEVATION-E.46



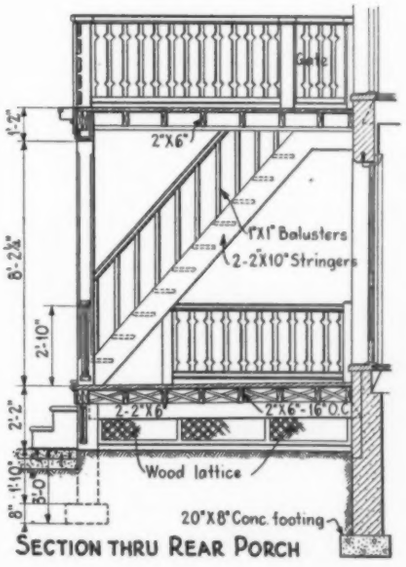
KEY PLAN



ELEVATION-E.48



ELEVATION OF REAR PORCH



SECTION THRU REAR PORCH

SIMPLE ARCHITECTURAL LINES, long uninterrupted wall areas shown in elevations above reduce brick laying costs on Lindcrest houses. Each apartment has own front entrance and private front and rear stairs. Rear porch detailed above looks out over attractively landscaped lawns, gardens and playgrounds and is intended to replace the front porch as a gathering place for the family. Gustave W. Iser, architect.

Mixing and Handling of Concrete Is Easier

More Rigid Specification of Accurate Control in Drier Mixes Outmodes Older Machines; Handling Speeded Up on Jobs

By B. F. DEVINE
Chairman, Mixer Manufacturers Bureau

BETTER equipment means an easier job for contractors, faster and safer work on the job and more profit when they balance the books at the end of the year.

Most contractors own or operate concrete mixers that have served them well for many years. They have made money for them, but it is just possible that the modernization which has taken place in mixer design during the last few years may offer today machines that surpass the performance and convenience of even the old favorites.

During the past six years contractors have been called upon to meet new and more rigid specifications on a greater variety of jobs. The manufacturers of concrete mixing and placing equipment have had to meet those changing conditions also. The specifications, generally, call for drier mixes than in preceding years; control of the amount of water in the mix is now an item of first importance. It is because of this "step-up" in specification as well as in the variety of jobs that a "step-up" in the design of concrete mixing and placing equipment has been necessary.

Sizes and capacities of mixers have been standardized so well that no appreciable change has been necessary for 15 years.

The drum sizes and ratings of these machines are all standardized, under the Mixer Manufacturers Bureau sponsored by The Associated General Contractors. In general, the mixing speed and loading and discharging speed of the principal makes of machines are substantially the same.

Along strictly structural lines, however, there has been during the last few years a complete swing by all manufacturers away from the old cast iron construction to more modern designs made of welded steel plates and structural shapes.

Mixers Now Longer Lived, Easier Repaired

Practically all principal manufacturers now use this general type of design, and the overall result has been to provide a lighter weight, sturdier and longer lived machine.

This type of construction not only gives longer life under normal wearing conditions, but in cases of breakage due to accident or overloads, these machines may be more readily repaired in the field than the older design. In many cases the machines have been modified in design to make them safer from the standpoint of the operator and the man handling materials to and from the machines.

The very definite trend during the last year or two to the pneumatic tire wheel on many types of construction equipment is familiar to most builders. Building mixers up to and including the three bag or 14-S size were mounted on pneumatic tires at an early date.

Along with the use of pneumatics came the development of the two-wheel trailer type design that has found widespread popularity, particularly among those who are doing most of their work in locations that can be reached by paved roads and streets.

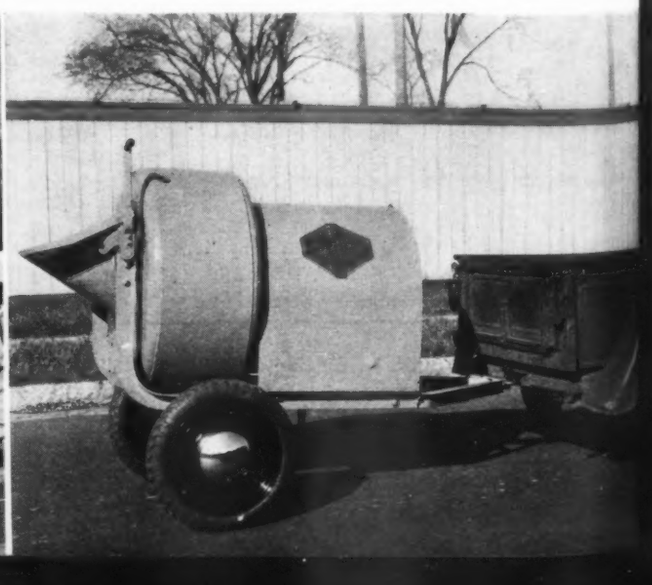
The two-wheeled machines trail well at relatively high speeds behind the utility truck which can be loaded with other equipment for the job.

End discharge machines have had a growing popularity over the side discharge type. Many manufacturers have worked out their design so that side or end and, in some cases, two or four wheel mountings may be readily accomplished by merely shifting the chassis under the mixer.

The combined influence of several state highway departments, and the pressure of operating requirements has, within the past several years, developed a decided trend toward the use of three-bag or 14-S size mixers.

Contractors have found that through the use of these larger mixers the same operator can turn out more concrete per hour, jobs move at a faster pace, inspecting engineers are better pleased with the concrete mixed in larger batches. To meet this need for a 3-bag mixer most manufacturers have completely modernized their design of this size machine. Through the use of high

BELOW: The 3½-S end or side discharge tilting mixer is still a favorite with some builders for smaller jobs. Since it trails behind almost any type of utility truck on pneumatic tires at relatively high speeds, it is most easily taken from one job to the next.



...nd More Profitable with Better Equipment

tensile strength steels and welded construction they have reduced weight, and through the use of pneumatic tires and trailer type mountings, have definitely taken the 14-S out of the class of a stationary or semi-portable rig and definitely placed it in the class of fast-towing, easily moved building mixers.

In choosing a new machine, due consideration should be given to the special features which leading manufacturers have made available, backed by extensive research and years of field experience.

In making this selection, the following points should be considered:

1. A size best suited for the work.
2. A skip that is easy to fill.
3. A skip that will discharge fast and scour well.
4. A mixing action that will meet every modern specification.
5. A discharge chute that has fast action and is easily controlled.
6. A water measuring tank that is accurate from every standpoint.
7. Power transmission that is protected by proper housing.
8. Control levers that are grouped for convenient one-man operation.
9. A machine that has no obstructions that might prove dangerous to workmen.
10. Moving parts that are properly guarded to meet state safety codes.
11. A machine that will tow easily.
12. A machine that will spot quickly and easily on the job.
13. Construction at every part of the machine that is sturdy, strong, that will last a long time.

The modern mixers of today can out-travel, out-work and out-live the older types of machines. Coupled with this will be found improved control of water and mixing time on all makes of machines.

As concrete specifications have become tighter and tighter, and inspections more rigid, many operators have found it profitable to take advantage of improvements in mixer design.

Another type of concrete mixing equipment that has had a wide and rapid growth during the last few years is the truck or transit mixer as used by many ready mixed concrete plants.

Over a period of years this type of equipment has reached a fairly stabilized degree of standardization with respect to sizes and capacity. Developments over a period of years have gradually improved mixing ability, definitely established accurate water control, and in general met the requirements of the most exacting inspecting engineers.

The value of ready mixed concrete to the average contractor ranges all the way from occasional use to supplement existing mixing equipment to the establishment of a small ready mixed plant for the specific requirements of a contract job such as some of the extended housing projects.

Increasing labor rates and the multiplicity of reports and clercial work required for even a 10-S mixing and wheeling crew have inevitably led the contractor to look for other means to secure concrete for his job. Additional savings may also fall to the contractor if his job is of such a nature that concrete may be placed directly into his forms from the truck mixers themselves.

There has been a very definite trend during the last two years toward the establishment of ready mixed concrete plants in towns of 10,000 to 50,000 which has increased the availability of this product to the general building contractor.

Concrete Handling Equipment Steadily Improved

Means of transporting concrete from the mixer to the forms has undergone little basic development in many years. Most of the more commonly used methods are some form of handling concrete in small lots or packages. Wheelbarrows and concrete carts or buggies have been doing essentially the same job for many years.

The addition of anti-friction bearings and pneumatic tires to both of these carriers was a definite improvement that increased the daily capacity per unit and at the same time lightened the physical load on the workman.

Bottom dump buckets as used on cranes and tramways have undergone few major changes in recent years, and continue to do a satisfactory job in most instances. Belt conveyors, air guns and similar transportation devices all have successful jobs to their credit.

All these latter devices have been steps toward the realization of a goal of continuous flow of concrete

(Continued to page 140)

THE larger non-tilt mixers ranging from 5-S to 14-S in size turn out speedy, accurate mixes on commercial and large-scale residential work. Some mixers can be adapted to side or end discharge, 2 or 4 wheel mounting, by shifting the chassis under the mixer.

Precut Framing Methods

California Trials Show Practicability

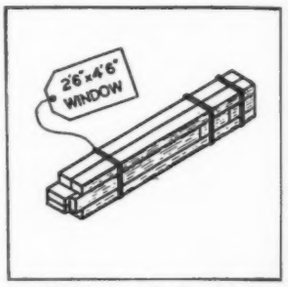
PRECUTTING of framing members on a power saw has become an established practice on many jobs. In the past it has been done most frequently by large building firms where a group of houses or apartment structures were involved. Recently the belief has grown that perhaps precutting could be done efficiently in the lumber yard. This method has been given a thorough and practical test in Southern California where the West Coast Lumbermen's Association, the Building Contractors' Association of Southern California, and the Lumber and Allied Products Institute of Los Angeles made a series of practical tests and put a precutting program into operation in the Los Angeles territory. The methods and procedures are reported in a new booklet entitled, "A Manual of Precut Framing for Light Frame Walls," issued by the West Coast Lumbermen's Association, Stuart Bldg., Seattle, Wash.

A considerable cost saving is indicated by the California experience. An on-the-job saving of $10 per 1,000 board feet of wall and partition framing is indicated. Under the plan followed, all wall and partition materials are cut to exact length, marked and bundled, ready for immediate erection and were delivered to the builder at no increase over the usual price paid for stock mill lengths.

An important feature of the precut procedure is that it permits the recutting of No. 3 Dimension into exact lengths of higher grade. By selective cutting, defects such as large knots or knotholes in the lower grades are removed with a minimum of waste.

Instead of the 2,000 pieces of lumber estimated in an average five-room house, precutting and bundling at the lumber yard would substitute standard lengths and bundles of stock units. Window and door assemblies would be cut and tied into convenient parcels, also fire blocking and bracing. Thus the framing for a typical house would be delivered to the job as, say, 12 window bundles, 12 door bundles, 21 sets of bracing and 17 parcels of fire blocking. All members are accurately cut, sorted and laid down on the job where they are used.

How the West Coast Lumbermen's Association, in conjunction with Los Angeles dealers and builders, analyzes the typical framing members of a house is shown in the accompanying charts and tables. The method of framing doors

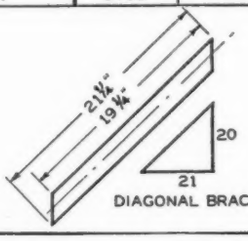


WINDOW AND DOOR framing members are precut and tied in bundles for delivery.

STANDARD PRECUT WALL FRAMING

CUTTING LENGTHS: UPPER CRIPPLES (UC) 2×3¼ NO.2 DIM.	HEADERS (H) SHORT * 2 pcs 1¾×3¾ or 1 pc 3¼×3¾ NO.1 DIM.	HEADERS (H) LONG * 2 pcs 1¾×5¼ or 1 pc 3¼×5¼ NO.1 DIM.	SILL HEADERS (SH) 1¾×3¾ NO.2 DIM	TRIMMERS (T) 2×3¼ NO.2 DIM	LOWER CRIPPLES (LC) 2×3¼ NO.2 DIM.	ITEM	SASH OR DOOR SIZES	BUNDLING: PIECES PER BUNDLE (H) *	2×3¼ 5'-2"	2×3¼ 3'-10"	2×3¼ 2'-6"	2×3¼ 6'-8¼"	2×3¼ 5'-3½"	2×3¼ 4'-9½"	2×3¼ 4'-3½"	2×3¼ 3'-3½"	2×3¼ 3'-3"	2×3¼ 2'-3"	2×3¼ 1'-9"	2×3¼ 1'-3"	2×3¼ 0'-9"	2×3¼ 0'-7"	1¾×3¾ 5'-2"	1¾×3¾ 3'-10"	1¾×3¾ 2'-6"	FIRE BLOCK'G.	DIAG. BRAC'G.	TOTAL	FT B.M. PER BDL.	WT. PER BDL. LBS
0'-9"	2'-6"		2'-6"	3'-3½"	3'-3"	D.H.WINDOW	1'-6"×3'-0"			1					2	2				2			1			8	14.8	46
0'-9"	2'-6"		2'-6"	4'-3½"	2'-3"		2'-0"×4'-0"			1				2			2			2			1			8	14.8	46
0'-9"	3'-10"		3'-10"	3'-3½"	3'-3"		2'-6"×3'-0"		1						2	3				3			1			10	20.1	63
0'-9"	3'-10"		3'-10"	4'-3½"	2'-3"		2'-6"×4'-0"		1					2			3			3			1			10	19.5	60
0'-9"	3'-10"		3'-10"	4'-9½"	1'-9"		3'-0"×4'-6"		1				2					3		3			1			10	19.1	59
0'-7"		5'-2"	5'-2"	4'-9½"	1'-9"		3'-6"×4'-6"	1					2					4			4	1				12	26.5	82
0'-7"		5'-2"	5'-2"	5'-3½"	1'-3"		3'-6"×5'-0"	1				2							4		4	1				12	26	80
0'-7"		5'-2"	5'-2"	4'-9½"	1'-9"		4'-0"×4'-6"	1					2					4			4	1				12	26.5	82
0'-9"	2'-6"			6'-8¼"		DOOR	2'-0"×6'-8"				1	2									2						5	13.3	41
0'-9"	3'-10"			6'-8¼"			2'-6"×6'-8"		1			2									3						6	15.5	48
0'-9"	3'-10"			6'-8¼"			2'-8"×6'-8"		1			2									3						6	15.5	48
0'-9"	3'-10"			6'-8¼"			3'-0"×6'-8"		1			2									3						6	15.5	48
SEE SKETCH BELOW						DIAG. BRAC'G.																				6	6	7.1	11
SEE SKETCH BELOW						FIRE BLOCK'G.																				10	10	8.1	12
2×3¼, NO.2 DIMENSION, TRIMMED BOTH ENDS TO 7'-9".						STUD		NOT BUNDLED																					

* BUNDLING SCHEDULE SHOWS SOLID HEADERS. FOR TWO-PIECE HEADERS, MULTIPLY BY TWO



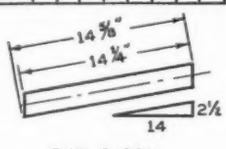


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CHART USED in cutting and bundling standard framing members. Length of each framing member is indicated as well as the number of pieces in each bundle and the board feet.

and windows as shown in the sketch at the bottom of this page is important. Note that the opening between trimmers can be moved to either right or left between standard studs, and can be located at any point along the wall.

Under the California procedure, estimating and listing of framing members by the builder was greatly simplified. The detailed procedure will be described in a later article. No change of construction methods was involved, but greater accuracy, less waste and fewer mistakes were achieved bcause of the more thorough checking involved in precutting.

Basic standards were set up by the local lumbermen acceptable to local builders. The following standards and formulas for estimating lengths are recommended:

Standards

The arithmetical sum of the lengths of all members between upper and lower plates—that is, upper cripples, header, trimmers, sill-header and lower cripples—as shown in Figure 1 is equal to the stud length. The length of a stud is the key to vertical dimensions. Seven feet, nine inches, is the adopted standard.

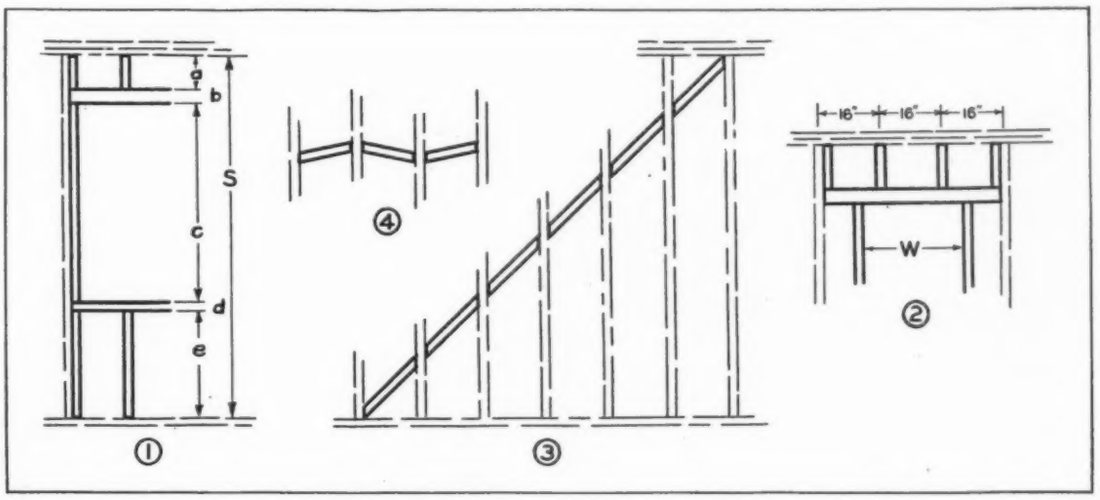
This *7′-9″* stud length, used between a single sole plate and double top plate, provides a minimum eight-foot ceiling height between finished floor and finished ceiling. It is adapted to 8′-0″ wall coverings (or multiples of two and four feet), with only a shoemold required for finish at the floor line. Answering architectural and building code requirements, the *7′-9″* stud has received approval from all quarters.

The header is the key to horizontal dimensions. It occupies the minimum number of stud spaces which will admit the intended door or window, as indicated in Figure 2, below. By such means, the position of door or window can be at the exact point indicated in the design. Trimmers can be moved to the right or left as desired. Sole exception occurs infrequently where one trimmer must infringe on a stud space, thereby necessitating an adjacent additional stud.

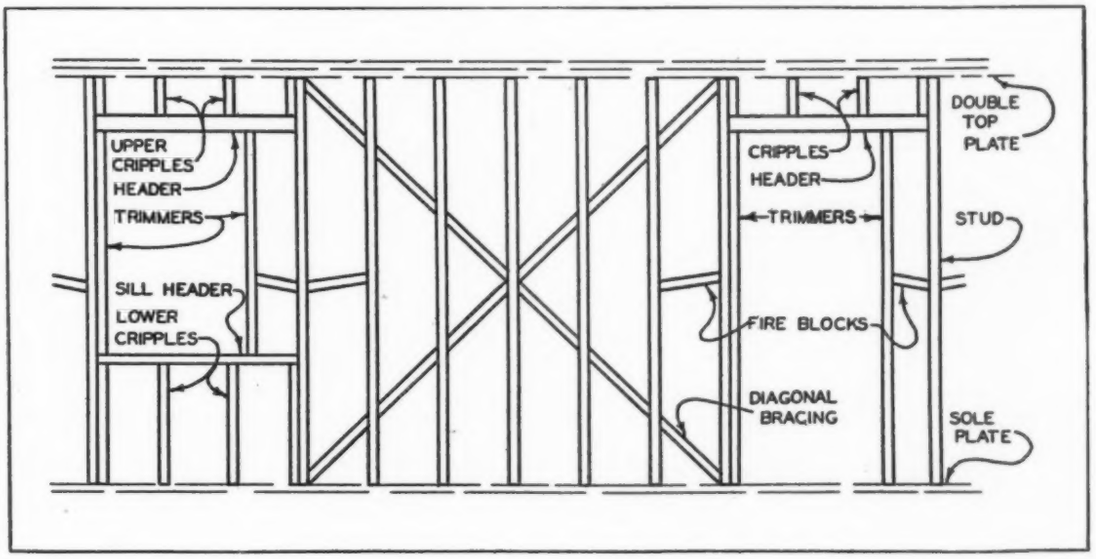
Requirements for diagonal bracing and fire blocking are shown in Figures 3 and 4, respectively.

In the development of these and other standards, there have been no changes in the fundamentals of sound framing, even though they may differ to a certain extent from the practice of some builders. Standards for the entire system are here listed. Each detail has been studied with great care and selected for valid reasons. The inherent economies presented by any reasonable degree of standardization are, it is believed, too well recognized to require further justification here. These standards, which reduce lengths of framing members

(Continued to page 136)



BASIS for determining lengths of standard framing members is indicated in this sketch, used in connection with formula described in accompanying article. Lengths of stud and header are guiding factors.



A TYPICAL wall section can be reduced to the standard framing members shown in this drawing. Members are precut and bundled into door and window assemblies, convenient parcels of fire-blocking, runs of bracing, etc.

How to Lay Out Building Sites with Accuracy

SUCH advantages as saving of time and money and giving greater accuracy in making lot and building layouts through the use of a level are appealing to larger numbers of builders now that home building is steadily increasing. Methods of establishing building sites with tapes, lines and improvised board squares are being outmoded in this day of more rigid inspections and standards.

The illustration below shows level being used on the famous Gilbert & Varker housing project at Clairton, Pa. For the benefit of those who believe that such procedure is too technical or beyond their requirements, the following method of laying out sites quickly and accurately is described to demonstrate its simplicity.

By means of a plumb bob, suspended from the hook under the spindle, the center of the instrument is set directly over the station mark or corner of the lot, or building to be laid out. The level is then carefully leveled, after which neither the hands nor the coat should be allowed to touch the instrument legs.

If AB in Figure No. 1 represents the street line and the corner of the proposed building is at C, which is distant from the street line, NC, then a distance OP equal to NC should be measured from the street line at some point O which is at least as far from N as the length of the proposed building. Set a stake at P, then the line CP will be parallel with the street. A distance from C in the straight line towards P is next laid off, equal in length to the building or lot; this determines the two front corners C and D.

To get the line at right angles to CD, leave the sights still directed on the stake at P. Then turn the eyepiece end of the telescope to the left until the vernier has turned a right angle, or 90 degrees. A sight along its new position will give the line CF, on which the required distance is measured off to corner F.

Next move the level to D and level it up as before. Direct the sights to a rod on the stake at the corner C. Then turn the eyepiece end to the right until the vernier has turned a right angle. This will give the direction of DE, on which line the width of the building or lot will be measured off, thus determining the corner E.

To prove the work and make sure that no errors have occurred, the level should then be set up at E, and if the distance EF equals the distance CD, the work is proved to be correct. If either of these fails there is an error and work must be repeated until it checks.

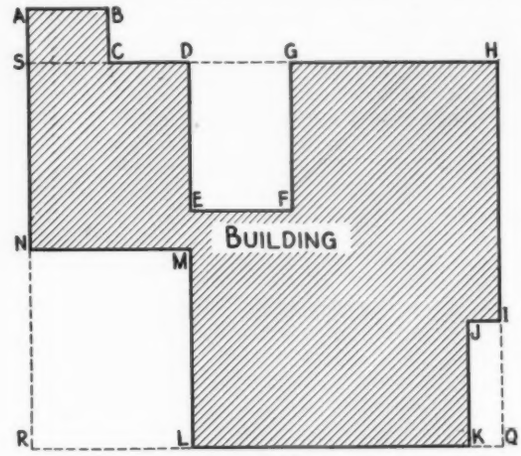


FIGURE NO. 2

Where the outline of the building is other than a rectangle, the procedure is just the same from one point to the next, but more points have to be arranged for, and the final proving of the work is more likely to reveal a small error. It is usually advisable with an irregular shaped building, such as shown in Figure No. 2, to lay out first a large rectangle which will comprise the entire building or a greater part of it. This is shown in Figure 2 as the rectangle HQRS. Having this once established accurately, the remaining portion of the layout will consist of small rectangles, each of which can be laid out itself and proved separately. As will be noted, these other rectangles are IJKQ, LMNR, ABCS and DEFG.

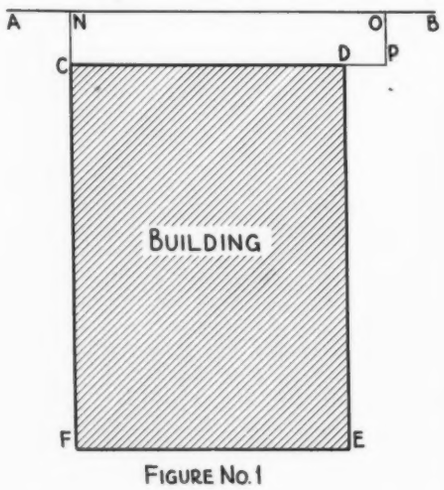
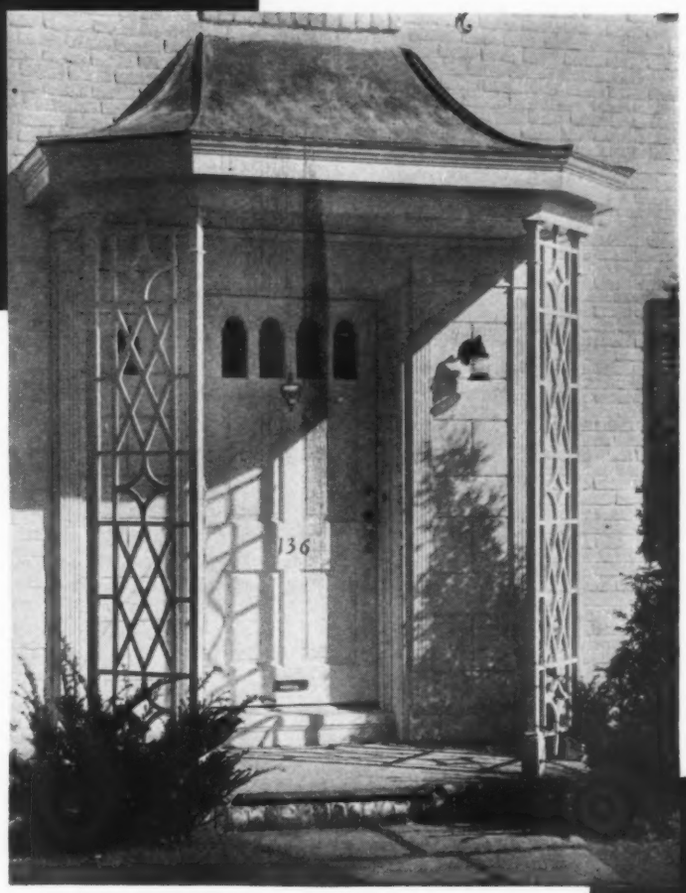


FIGURE NO. 1

RIGHT: A level in use on the site of Gilbert & Varker's widely publicized housing project at Clairton, Pa. (See American Builder, Feb. 1939.) Figs. Nos. 1 and 2 relate to text above on how to lay out lots and buildings.

THE CHARM of a well selected Stock Door is felt in this Munsey Park, L. I., entrance; Henry W. Johanson, Architect.



STOCK DOORS

for Better Homes at Lower Cost

The Stock Door Industry—Wide Choice of Designs—Nation-wide Distribution—How to Paint, Stain, Decorate—Distinctive Hardware—Factory-Fitted Doors—Mirror Doors—Garage Doors—Proper Care of Doors—Pine Door Specifications and Grades—Fir Door Commercial Standards

Better Homes Cheaper—because of STOCK DOORS

By BERNARD L. JOHNSON

Editor American Builder

NOT enough has been said about *doors*. About the outside doors, both front and rear, on which the entire home depends for its security, enough has not been said—nor about the interior doors in the home, which assure quiet and privacy for the individuals of the household and constitute a dominant note in all home decorating and furnishing achievements.

Not enough has been said about standardized or *stock doors;* yet in their mass production and nation-wide distribution they are the building industry's first success in "prefabrication"—a principle in modern industry which many are urging upon the building field as a means of lowering building costs, never realizing how completely the important item of house doors is already factory-built nor what a substantial saving to home building costs these "stock doors" have already made.

So we are undertaking here to say something about doors—of their importance, their romance, their place in architectural design and in decoration, their care at the building site and in the finished home, and their manufacture, distribution and utilization in the home of today.

The entrance to the home, what it "faces the world" with, is unquestionably one of the most important features of the entire residential structure. It gives that all-important *first impression.* A correctly trimmed front door truly represents the first impression one has of the style of a dwelling. It may also represent to a great extent the character of the occupant as well. For the observer will note, in passing along the average residential street, forbidding doors, cordial doors, extravagant doors, sedate doors—in fact, doors displaying every characteristic inherent in man. This may very well be so, for man's possessions do reflect his character and attitude toward life and his fellow man.

Paul T. Gilbert, writing in the Chicago Herald and Examiner, has expressed this thought a little differently, in a versified tribute to "Doorways":

"Doorways there be which seem almost . . . to play the part of gracious host . . . delighted with their friends to share . . . their ordinary board and fare . . .

"Crossing their thresholds, one may find . . . a welcome warm and faces kind . . . a cheering cup, a cozy chat . . . a glowing fire, a dozing cat . . . a copper kettle, glowing bright . . . reflecting the soft candlelight . . . an easy chair, a ticking clock . . . all these await the neighbor's knock.

"Doorways, like hosts, may humble be . . . yet radiate hospitality."

In these days of wide interest in low-cost homes, when so much thought and study are being directed toward the objective of producing more house for the money, so that more and more of the low and medium income families may be better housed, the economies which stock doors offer take on new importance.

A STOCK entrance door of superb design suggested by Early Connecticut River Valley examples as found on houses built before 1750.

As compared with the product of small local shops, stock doors today are better designed, better constructed, more quickly available and much lower priced.

As compared with *special* designs in doors, made up individually from architects' details, the present selection of stock door designs, both entrance doors and interior doors, is just as authentic and a great deal less costly. In fact, the architect today in considering the best interests of his client will often conclude that to be a real connoisseur in the selection of stock doors from the catalogue is a higher architectural function than that of exercising his originality and devising something "different" in a door, at a cost in delay and money of a very sizable amount.

The stock doors are architecturally correct, many of them having been designed by such leading architects as Dwight James Baum, Frederick L. Ackerman, and Russell F. Whitehead. And the selection is so complete and so varied that practically every conceivable design need is covered in the well manufactured lines of the large mills. These standardized doors are carried in stock by responsible woodwork jobbers in every part of the country and so are quickly available locally through the retail dealers in every community.

The important advantages of stock millwork in today's home building program have been summed up in a signed statement by the manufacturers' association in these words:

"The Advantages of Stock Windows and Doors—In serving and protecting the best interests of his clients, it is the aim of every architect and builder to avail himself of every logical economy which does not sacrifice quality. In no way can this be better accomplished than in acceptance and use of standardized (stock) products. Stock windows, doors, and frames as distinguished from products of costly, time-consuming special design and construction, have the following definite advantages in their favor:

"(1) Lower Cost—Made on a quantity production basis from time-tried designs which have proved their

economies in utilization of available stock lumber dimensions and species, specialized machine operations, and ease in distributing, warehousing, and marketing.

"(2) Availability—Stock windows, doors and frames are available for immediate delivery in all localities nationally. The same designs and quality are obtainable at the smaller country lumber and millwork distributing yards as are obtainable in the metropolitan centers.

"(3) Standardization—The national standards of design and quality are adhered to rigidly.

"(4) Adaptability—They are adapted to all types of construction and architectural design, and, by varied methods of installation and arrangement, may be used to produce special effects at a minimum of cost."

Stock Door Industry of Giant Size Serves Home Builders

THE manufacture of stock doors in the United States is today "big business," a mass production industry. Standardization of manufacturing technique, specialization of labor and production to assembly-line schedules have brought speed, efficiency and economy to this essential home building material industry not unlike that which prevails in the highly-mechanized automotive field.

Since doors are as basic a building material need to man as shelter itself, their manufacture in the United States has kept pace with the march of the pioneers across the continent. Door manufacture began almost immediately after the landing of the Pilgrims at Plymouth Rock. Since every man at the outset was pretty much his own carpenter and house-builder, he was also his own door manufacturer.

However, it was not long until the making of doors became a business for specialists and was centered in the wood working shops that sprang up in every city and small town. In these shops, doors were made to special order; and more and more of the business drifted from the individual carpenter to local mills, since the latter were able to build better doors for less money as their specialized experience and equipment increased. From this it was just a step to even greater centralization and specialization, and the establishment of the huge door factories, as we know them today, which are capable of producing thousands of doors daily and millions of doors annually.

Since such large scale production necessitated more complete standardization of design, size and materials, and entirely new marketing methods as well, it became obvious that a change from the era of made-to-order doors was at hand. Doors had to be manufactured in stock patterns to insure the desirable production economies, and then had to be marketed as stock items so that they would be readily accessible to the builder and yet not become a burdensome inventory to the jobber and the retail dealer.

This change from an almost unlimited number of individual door designs to what appeared to be a comparatively few stock designs, was not as revolutionary a move as one might think. Study and analysis showed that, although there were minor territorial differences in design and size preference, basically the doors varied only a little. Thus it was possible to set up standards without very much difficulty; and the stock doors were accepted readily, since they offered superior construction at very great savings to the home builder.

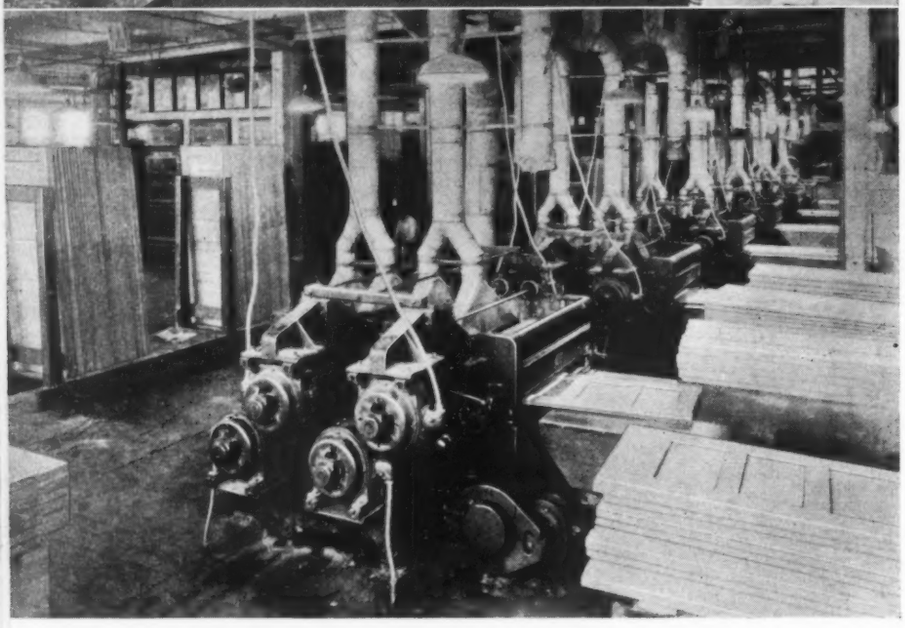
The stock door industry therefore has grown rapidly, until today its markets are nation-wide and its producing plants are located in every section, including the upper Mississippi valley for hardwood veneered doors and pine doors, the states of Washington, Oregon, California and Texas, where they manufacture principally Ponderosa pine doors, and the North Pacific Coast, where numerous plants manufacture Douglas fir doors. Although complete and accurate domestic production figures are not available, it has been estimated that in excess of 12,000,000 stock doors were manufactured and sold in the United States in 1938.

The door industry has followed the lumber operations; and this has determined to a considerable extent the species of wood used in the manufacture of stock doors. At first centralized in the New England States, door manufacture subsequently moved to the upper Mississipi River as the eastern timber was logged off. For many years thereafter Northern White Pine, logged in Michigan and Wisconsin, was the dominant species in stock door manufacture. Then, following the available timber supply again, door men jumped to the Pacific Northwest for lumber; and Ponderosa and other Western Pines, together with the giant Douglas fir, became the prevailing stock door lumbers. These woods continue to be preferred in stock door manufacture today, although many yellow pine and cypress doors are made, particularly in the Southern states.

Sensitive to any architectural trends that may affect the designs of their doors and keenly aware of the necessity for continuous product research looking toward the development of an even better product, the stock door industry has developed manufacturing technique to a high degree of efficiency in its effort to meet the demand for better building materials at lower cost.

Only selected dry stock is used in the manufacture of stock doors. The dry kilns reduce the moisture content to 7 and 8 per cent, which, it has been demonstrated by the Forest Products Laboratory, is the average percentage prevailing in the atmosphere of interiors throughout the United States. This drying of selected stock effectively reduces to a minimum the possibility of later warping, sticking and similar difficulties.

MASS production for low costs in large modern mills characterizes products of the Stock Door industry.



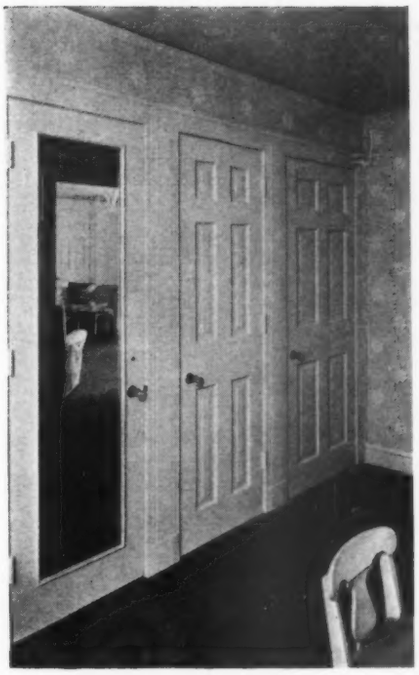
LEFT, UPPER: Stiles and rails ready to go to the door-drivers or set-up men. Some door factories can assemble more than 5,000 stock doors a day.
LOWER: The durable construction and excellent finish of stock doors are made possible by advanced design and the use of modern equipment; part of which is this huge battery of 8-drum, motor-driven sanders.
BOTTOM PAGE, Left: Stock door being assembled by "set-up" man;
RIGHT: Boring machine drilling door stiles to receive dowels.

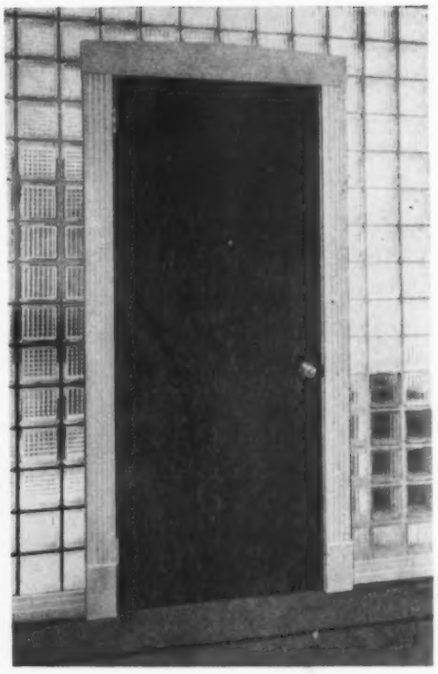
Since the introduction of dowel machinery about 40 years ago, stock doors have been made almost entirely with dowel construction. Since doweling lends itself to large-scale production by its very nature and permits of greater material economies, it is now virtually standard construction, especially in the large factories. The advance in the technique of doweling, particularly the development of highly accurate boring and 3-in-1 doweling machines, together with the use of high grade improved glues as bonding agents, has brought added strength and rigidity to stock doors far beyond actual requirements in use.

Finally, constant research aimed toward improving the finishing of stock doors is being carried on by the manufacturers, their associations and by leading paint manufacturers. As rapidly as developments take place, these improvements are placed before decorators and painters so that stock doors may present an increasingly better appearance to the ultimate home-owner, assuring him of more lasting satisfaction. Standard practice with some of the producers today includes attaching painting specification labels to each door as it leaves the factory as added assurance of a perfect finish for each door.

The stock door industry offers the home builder the opportunity to purchase a sturdy, durable, architecturally-correct door, which is always immediately available from his nearest lumber dealer, at a price possible only through the economies of mass-production and mass-distribution. As such, it is an important and indispensable item in present day building material merchandising.

Wide Choice of Stock Designs





THE decision to equip a new home, apartment or other building with stock doors does not mean that any staleness or monotony or any mediocrity from a design standpoint will result.

The door industry today offers such a wide choice of sizes, designs and woods that practically any building need can be met. The selection is so varied and each design elevated to the position of "stock" or standard is so authentic and altogether pleasing that complete satisfaction is assured.

All these door designs are illustrated in portfolios and catalogs in the consulting rooms of the retail lumber dealers and in architects' and builders' offices. They are pictured realistically; they can be selected and ordered with confidence.

Also in the office of many dealers are displays of these doors in the most frequently wanted models. The catalogs show the standard doors which are in use in practically all sections of the country and represent the designs usually carried in stock or made in stock quantities. There have been additions to the line of stock models from time to time, but the odd designs or unusual styles of doors seldom reach the stage where they are generally accepted as popular designs.

Stock house doors may be obtained in the following broad classifications of design and construction:

Panel Doors: With solid softwood stiles and rails and solid or laminated panels, or with veneered softwood stiles, solid softwood rails and solid or laminated panels, or with veneered softwood or hardwood stiles and rails and laminated panels.

Flush, or Slab Doors: With softwood or hardwood face veneers unselected for color or grain figures—intended for paint or stain and varnish finishes, or with face veneers carefully selected for color and figure of grain—intended for finishes which emphasize beauty of wood. Flush types are available with colored inlay stripes, "V" grooves in face, single or multiple glass openings, and other variations adaptable to special architectural effects.

Sash Doors: With solid or veneered stiles and rails and a huge variety of arrangements of glass openings and panels.

Casement or French Doors: Single doors or pairs with solid or veneered stiles and rails and any number and arrangement of lights.

The six-panel Colonial with a few variations in the arrangement at the top, such as the four small lights or two top panels glazed, is the most commonly used in Colonial homes. For the modern style home, either a flush door or a plain door with two vertical panels and glass above is used.

Some special doors are made from a "stock" beginning. For instance many of the jobbing distributors buy the doors without divided bars and add these bars later to match the windows. In other words, here is a stock proposition that possesses flexibility to meet varying demands. It is only natural, therefore, that much work has been done to make the various parts interchangeable in such a way that the lowest possible manufacturing cost is obtained. By this we mean that the width of the stiles,

THE STOCK entrance doors produced by the big mills receive special "bench-work" by highly skilled workmen.

rails, panels, muntins, etc., is quite uniform, and it is merely a matter of arranging them within the door so as to get the desired style.

Such parts are produced in large quantities and are machined with special cutter heads which insure extreme accuracy and uniformity. A small shop, of course, is not able to do this and there is considerable more variation in the various parts because of their being made piecemeal.

Sizes have also been standardized as experience has proved most economical and satisfactory; also these sizes follow the trend of building demands. For example, the 6 foot 8 inch door in height is now more popular because of the lower ceilings generally used today.

The development of these sizes has also been worked out to conform to component parts, such as jambs, trim, brick openings, etc., so that further economies are effected by adhering to such standard sizes. Then, too, there is the matter of uniform sizes to match screen doors and combination doors.

As a further advantage, the interior decorating supplies also conforms to these standard sizes, so that shades, curtain rods, draperies, etc., will fit these standard sizes; whereas special sizes require special auxiliary parts all the way through at a greatly increased cost.

This standardization has found its way into other products within the homes, such as the doors used on the kitchen cabinets, closets, broom cabinets, access doors, etc.

A very interesting economy story is being written around this standardization of products as the building public is becoming more conscious of these many savings and advantages of specifying standard designs and sizes.

Stock Doors Efficiently Distributed

Jobber-Dealer Service Gives Builders Everywhere Advantage of Mass Production

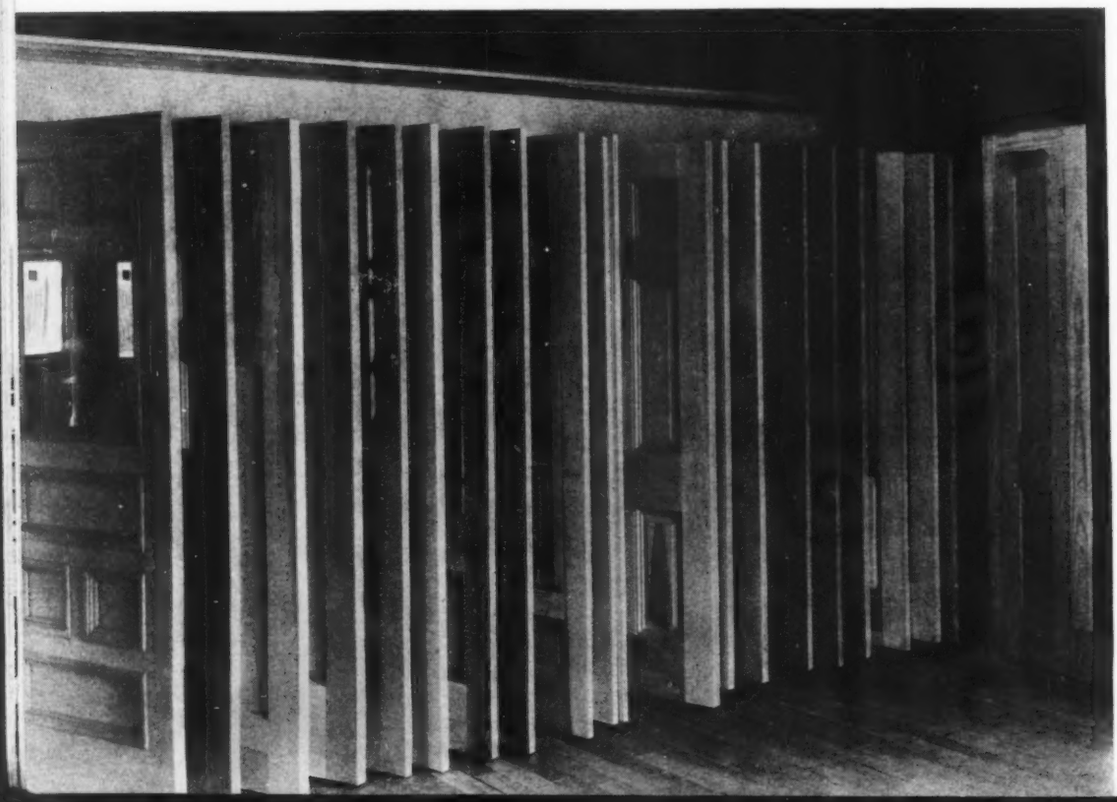
THE Stock Door Industry is one of the few in the United States in which marketing efficiency has kept pace with manufacturing efficiency. It is only through mass marketing that the economies of mass production of stock doors and other stock woodwork are passed on to the consumer. Furthermore, mass distribution has brought with it its own economies. That is why stock doors that are so well designed and so well made are so easily obtainable and cost so little.

Few people realize that in the United States today there are approximately 300 sash and door jobbers with a stake of 100 million dollars in the mass distribution of stock woodwork. The efficiency of their methods is reflected in the service offered to the building industry by the 22,000 retail lumber dealers with whom they work shoulder to shoulder.

American manufacturing efficiency, the result of a high degree of specialization, frequently is cited as a good example that the world in general can well afford to follow. The charge is often made that the failure to apply the principle of specialization to the distribution process has resulted in a lag in marketing efficiency. Let us see if this charge holds true in the case of stock doors and stock woodwork.

A tree standing in a forest is of little value to a contractor-builder or home owner in need of a house door 500 or 1,000 miles away. Through the manufacturing process, the tree is converted into lumber and, in turn, fabricated into a door. The manufacturer, by processing the tree and lumber, has provided what the economist would call form utility.

Regardless of quality or how well the door was made, it is still worthless to the contractor-builder or owner 1,000 miles away. To possess value it must be available to him at the time and place it is needed. Thus the door must leave the manufacturer's plant and enter our dis-



STOCK DOORS are on display in many retail lumbermen's offices; home builders and their professional advisors can select them with assurance.

tribution system where, in order to serve the purpose for which it was created, it is given what the economist has chosen to call time and place utility.

Thus we begin to see in clearer perspective the genuine importance of the distribution process.

The manufacturer, in his effort to give the consumer the best door at the lowest possible price, learned early the benefits of mass production and applied the basic economic principle of specialization and the division of labor to a wide range of his productive operations. Simultaneously, he realized that without mass distribution, mass production was an impossibility. Mass distribution called for the introduction of specialization in the field of marketing. Recognizing this, the industry early tackled the subject of marketing efficiency. As a consequence, the stock woodwork distribution process early separated itself into two distinct departments, the wholesale department, represented by the sash and door jobber, and the retail department, represented by the retail lumber dealer.

The wholesale department may be visualized as a reservoir into which the stock manufacturer pours his goods as fast as he makes them and gets his money to make more goods without waiting for the retailer to find customers for his products. It will readily be seen that if the manufacturer depended upon 22,000 retail lumber dealers for his specifications, the efficiencies of mass production would be nonexistent.

Thus, located in the center of every important marketing area in the United States, there will be found one or more sash and door warehouses. These jobbers, who total approximately 300, have a total investment slightly in excess of 100 million dollars. Of this amount, 40 million dollars is represented by warehouse inventories of stock woodwork. Twenty-five million dollars is identified by accounts receivable and is a measure of the credit service rendered by the jobber to keep the distribution service running smoothly. Another 35 million is tied up in warehouse facilities and other fixed and miscellaneous assets.

A considerable part of the jobbers' 40 million dollar inventory consists of stock doors. In the average jobber's warehouse, there will be found a variety of 800 to 1,200 different designs, sizes and species of doors in a stock of between 7,000 to 10,000 stock woodwork items. It is this tremendous reservoir that makes it possible for the retail lumber dealer to meet almost every conceivable demand for stock products.

The retail lumber dealer is primarily a sales specialist. His interest covers a wide range and variety of building products. He is well versed in architectural and construction practices and is the consultant upon whom the contractor-builder or owner depends when choosing his building materials. He arouses interest in home ownership, renders assistance in home planning and advises the consumer on the proper methods of home financing. Specialization in his field is applied to two all important functions—demand creation and consumer satisfaction.

Among the specialized functions performed by the jobber, the more important are buying, warehousing, financing, estimating and delivery.

As a buying expert, the jobber has the responsibility of selecting only those products best suited to the demand of the territory he serves. His expertness as a buyer results from a thorough familiarity with consumer needs, combined with an intimate knowledge of raw materials, manufacturing methods and transportation costs, in addition to the relative merits of competing products. Markets are carefully studied and future demands anticipated. To meet these anticipated demands, the jobber places large quantity orders with the stock manufacturers, thus making possible the efficiencies of mass production.

In this capacity the jobber is a speculator. He knows when and when not to buy. He acts as a buffer between the producer and the retailer and by forward buying smooths out the rise and decline in prices so that changes come gradually instead of fluctuating violently.

STOCK DOORS harmonize with fine interiors. In the hall of this Detroit (Mich.) home attention was paid to the newer accessories. The electrically-operated, announcement-of-guest chimes flank the door and softly and pleasantly signal visitors.

The jobber, having placed his orders and taken delivery, then becomes a storekeeper of the manufacturer who cannot afford to make the goods for stock and who, generally speaking, has no facility for so doing. Warehousing, while the term savors of something simple, is a highly specialized function. Unless the task is performed with great care and skill, substantial losses may be incurred through obsolescence, damage, spoilage, fire or theft.

Turning to finance, it is seldom realized the extent to which the jobber performs the functions of the banker. Generally speaking, he pays cash for his goods but grants reasonable credit accommodations to his customers. The result is that a substantial portion of the capital employed by the wholesale trade is required for the purposes of credit facilities extended.

The jobber also maintains on his staff experienced estimators, who stand ready to assist the dealer whenever estimating services are required. The devlopment of prompt and efficient delivery service has placed his warehouse within eight to twenty-four hours of the dealer's yard. In addition, he is the source of up-to-date price, product and market information.

It is the careful application of the principles of mass production to the field of distribution that has brought the Stock Door Industry to its present height of efficiency. This is what makes it possible today to give to Mr. and Mrs. America the best possible door at the lowest possible price. Not to be overlooked is the fact that stock doors, as a result of present distribution methods, carry with them a triple guarantee—that of the dealer, that of the jobber, and that of the manufacturer.

Effective Finishes for Doors

Treatment of Outside Doors—New Style Trends in Interior Finishing and Painting

By D. E. BREINIG

IT IS well known that the progressive door manufacturers have placed in the hands of the builder an exceptionally fine line of stock doors; architecturally right as to design and also structurally right; and at the same time, through large production, have been able to do this on an attractive cost basis.

From a property owner's viewpoint, it is a fact that the manner in which the doors of his home are painted or finished has a lot to do with the satisfaction the doors give. After all, the property owner mainly observes the appearance of the door. He assumes the door itself is right in every particular.

This section deals briefly with the basic principles involved in obtaining satisfactory finishes, or painting of the work, in the tones that are currently popular and desirable for the many types of homes.

Much "styling" is being done these days with paints and finishes. Correct styling, properly adapted to a particular home, goes a long way toward pleasing the home owner and making him enthusiastic about his house. The finished effect on a door, so prominently seen, is highly important.

Color styling must be done, of course in good taste, using a style or an effect that will harmonize with the architecture of the individual house. A well styled hat or dress may look well on one woman and badly on another; and yet with the variety of styles the other woman has no difficulty in choosing a style that is well suited to her. The same is true of the home. Choosing the proper kind and style of finish that is adapted to the particular home is vital to its complete success.

The property owner and his architectural advisor have the advantage of a wide variety of well-built stock doors to choose from. Yet through the proper finishing by the painter and decorator the stock doors can be given great individuality.

Lighter Tones Favored for Interior Doors

Most authorities agree that from a decorative and architectural viewpoint inside doors are favored today in the new lighter tones as contrasted to the vogue of darker tones so prevalent in past years.

A national survey as to style trends in paints and finishes has recently been completed by the Technical and Fact Finding Committee of the Council for Paint Styling of the National Paint Varnish & Lacquer Association, Inc. This committee has noted changing styles in house painting and interior decorations in a country-wide investigation.

In part, analysis of the exterior color treatment was drawn from study of some 880 new houses in many places. Late trends in interior decorations were obtained from 673 rooms in model houses and decorators' establishments and from the analysis of 719 colored illustrations from the decorators' sections of authoritative national magazines.

Style trends in painting and finishing included houses of many types which might be classed architecturally under the headings of Colonial, Small Cottage, Large Cottage, English, Spanish and Modern—a group of six.

It is impossible within the scope of this article to go into detail of style painting the exterior of these many types of houses. But the reader may obtain authoritative information about styling of a particular type of house through contacting reliable paint manufacturers or their dealers; or, the writer will be glad to furnish it upon request accompanied by the necessary information concerning the job in question.

Treatment of Outside Doors

The outside front door is one of the main features observed when one approaches a house. So, let us take up the painting and finishing of outside doors.

Two types of outside doors present themselves—the hardwood door generally finished to bring out the full and delightful grain of the wood, and the door for painted effects, quite generally made of fir or pine.

If the hardwood front door is to be finished and not painted, all open grain woods like oak or ash, for example, should be filled with paste wood filler.

Dark or stained effects are not in vogue now. Tinting of the natural wood filler with a small amount of color in oil, like the "umbers," will give a beautiful effect just off natural.

The finish of the front door should then be completed with at least two, and preferably three, coats of first-class spar varnish, applied according to the manufacturer's directions. The use of shellac should be avoided. The simplest way to get a well painted job that will stand up is to follow carefully the manufacturer's directions, bearing in mind that correct priming of the door is as vital as the last coat.

On exterior doors some architects and builders prefer to use the same general type of first-class paint used on the siding. Others prefer to use, over proper priming coats, the newer and effective type of blind and trim paints where colors are desired. They have a better gloss which is well retained, are more readily cleaned from time to time and wear well. Where white is desired, over proper priming, a first-class exterior white enamel is advised for this kind of finish.

In the Colonial type of house the present style calls for the doors being carried out in the body color and "no trend away from this practice appears evident." The color high-lighting of the home on the exterior comes from the blind treatment.

In the small cottage type the door in general, when painted, is carried out in the color selected for the trim and sash, and this is also true of the larger cottage type.

The door of the English type of home is generally finished in a light brownish tone to tie in with the half timbers, or painted in one of the more popular colors such as white, ivory, medium green or light blue, for which the newer type of blind and trim paint or exterior white is recommended.

In the French type of home the doors should be generally carried out in the trim and sash color; and, while this is usually in a single color, there appears to be a

trend toward two related colors to lend decorative interest.

In the Spanish type of home the current trend is that the doors should match the color of the trim and sash, or match the trim only, more generally with a single color.

In the modern type of home the door should generally match the trim and one color is usually used, although two are at times used to lend decorative interest.

In order to prevent moisture from getting into doors, it is well to make certain that the tops, bottoms and edges of all outside doors are given a protective coating. This is a very important detail.

STYLE TRENDS IN INTERIOR FINISHING AND PAINTING, PARTICULARLY OF DOORS

With the prominence of a door in any room it is vitally important that the door and trim treatment "tie in" correctly with the type of room, its furnishings and general decorative scheme.

Each home presents its own problems as to the combination of colors best suited. With a wide variety of effects to choose from, delightful results that are distinctive, at the same time well adapted, are obtainable.

In the finishing of hardwood doors, heavily stained effects should be avoided, the trend being to accentuate the full and interesting grains of the woods and use one of the many delightful newer tones.

There are on the market highly specialized stains of different types, which when used with the proper finishing coats, according to the manufacturer's directions, give these newer tones. The same type of stain does not necessarily "take" alike on all woods.

The newer tones of finishes include, for example, a large variety of light brownish tints, many shades of gray, fumed oak and even antique maple tones. Pine may be brought out in a delightful "pickle pine" effect. Knotty pine takes a different type of stain, usually a delicate tone, very light and somewhat on the brownish tint to give an "old pine" effect.

After the right tone of stain for the particular wood involved is decided on, the finishing or protective coats must then be adapted to tie in with the results desired.

Some finishes definitely call not for a built-up finish but for one of the specialized coatings that thoroughly protect the wood and finish, at the same time give the appearance of not being heavily coated. Other treatments call for a thin coat of pure shellac and a well waxed job, and still other effects demand the ever-satisfactory, long-used varnish system, in connection with which high gloss effects are not in vogue except in bathrooms and kitchens. Therefore, the varnish should be rubbed, or a first-class dull varnish used.

You have no doubt noticed in the current furniture offered the so-called "blond" or bleached effects and variations resembling wheat or rye tints. Such effects may be obtained on interior doors by bleaching the wood with a very special bleach and then proceeding with the several necessary coats as per the manufacturer's directions.

A large proportion of doors in many rooms are naturally desired in a painted effect. The decorator can readily tint the white finishing coats he uses to the many newer tones in light pastel effects.

In a recent issue of "House & Garden," a committee of leading decorators reported on the newer schemes for rooms that you will shortly be seeing or hearing about. A delightful cocoa tone was ahead for certain types of rooms. Turquoise was popular, very pale to deep shades. Definite newer greenish pastel tints found favor. Other rooms called for some of the newer yellow tones and still others called for gray. These are the "newest" colors.

In living and dining rooms the door and trim is customarily lighter or in the same color as the walls. Nevertheless there is an increasing trend for the use of a slightly deeper tint on the door and trim than on the side walls. Among other popular door and trim colors are sand, medium lemon, light green, light gray, ivory and, of course, white is well adapted in some living and dining rooms.

In bedrooms the treatment of doors and trim continues to be lighter than the walls, and the treatment, as far as style is concerned, is approaching the wall effect. Such newer shades as sand, azure of various tones, lemon yellow, ivory and even a particular type of red and dark blue are coming into quite general use.

In kitchens, bath rooms and breakfast rooms the tendency for door and trim is toward brightness.

The tendency of finishing doors in painted or enameled effects to tie in with the general color scheme of halls, living rooms, dining rooms and bedrooms calls for the use of flat or eggshell finish. High gloss is to be avoided.

The use of gloss enamel or paint on the doors in kitchens and bathrooms, however, is still the general tendency and has the great advantage of being most easily cleaned.

Builder, architect and decorator have facilities for submitting a good selection of right color treatment; and progressive paint manufacturers, through their dealers, offer an authoritative decorating service when they are given the necessary information.

The writer will be pleased to submit suggestions and samples of door finishes for home owners' selection, or assist the architect, decorator or builder to serve the home owner if he is furnished with the detailed information as to the rooms involved and the general exterior architectural plan and surroundings. All of this would be with the idea of having the doors not only well but economically finished in a manner that will tie in pleasingly with the setting of the door in the general outdoor or indoor scheme.

PLEASANT utility is illustrated in this bedroom closet door of stock design in full-length built-in mirror. Coupled with the built-in wall mirror over the closet linen trays, the mirrored door offers enjoyable dressing facilities quickly appreciated by the house-shopping couple seeking that extra something in a home.

Distinctive Hardware for Stock Doors

Authentic Period Effects at Small Cost
Moderne Trend to Color in Door Sets

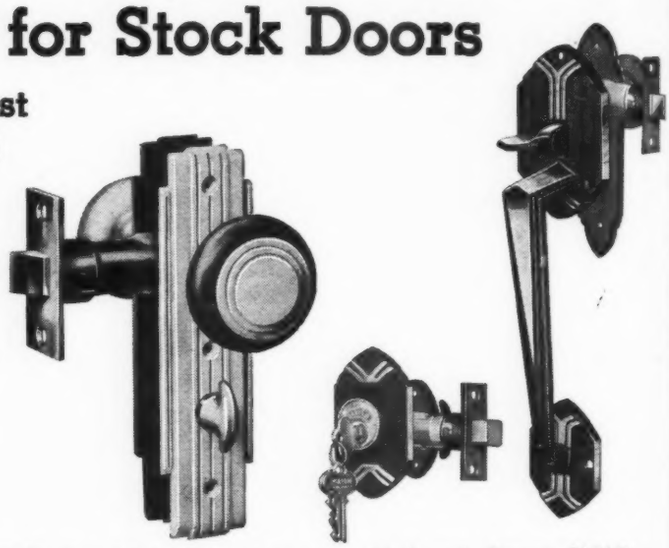
By E. B. NEUMAN

GOOD homes for less and small homes of authentic period styling are easily achieved today in any community because of the correct architectural design that the stock door manufacturers have built into their products, especially when completed and embellished with the properly styled door hardware now on the market. For, accompanying the progress in good design and good construction of stock doors, has come an almost revolutionary improvement in door hardware.

Hardware highlights the door and is one of the important keys to style for the entire house. Emphasis is often placed on the hardware for the entrance door since this is a prime center of interest and usually a point of greatest importance in design harmony. Interior doors, while properly conforming to the general scheme, can be hardware-equipped with greater freedom of choice, depending on the decorative plan of each room. Good door hardware today comes in brass, wrought iron and chromium plate, and the newer color line of molded plastic in many solid, permanent colors.

As a service to period design, so that stock doors as well as special doors may be trimmed in a manner architecturally correct, leading hardware producers have grouped their offerings into definite schools of design. Hand wrought ornamental hinges have also been highly developed in mass production to reproduce at small expense the beautiful hand-forged ironwork of the Italian Renaissance and other early craftsmen periods. Hinge straps, beautiful handle sets, knockers, shutter dogs and other items give the builders those pieces of character decoration which make a distinctive home.

Color is the strong and dominant note in today's decorative vogue, and new ideas in "hardware of color" give the builder a new means of glorifying stock doors and low-cost homes at no extra expense. And these items of hardware of color not only apply to room doors but also to case, cabinet and kitchen doors to brighten up and stylize those important home features. This cabinet hardware of color is said to be "color toned" and comes in matched sets all of modern design, finished in sparkling chrome dashed with gay color lines—red, ivory, yellow, green, blue, and ebony black. Stock cabinet doors are gorgeously finished with such hardware.

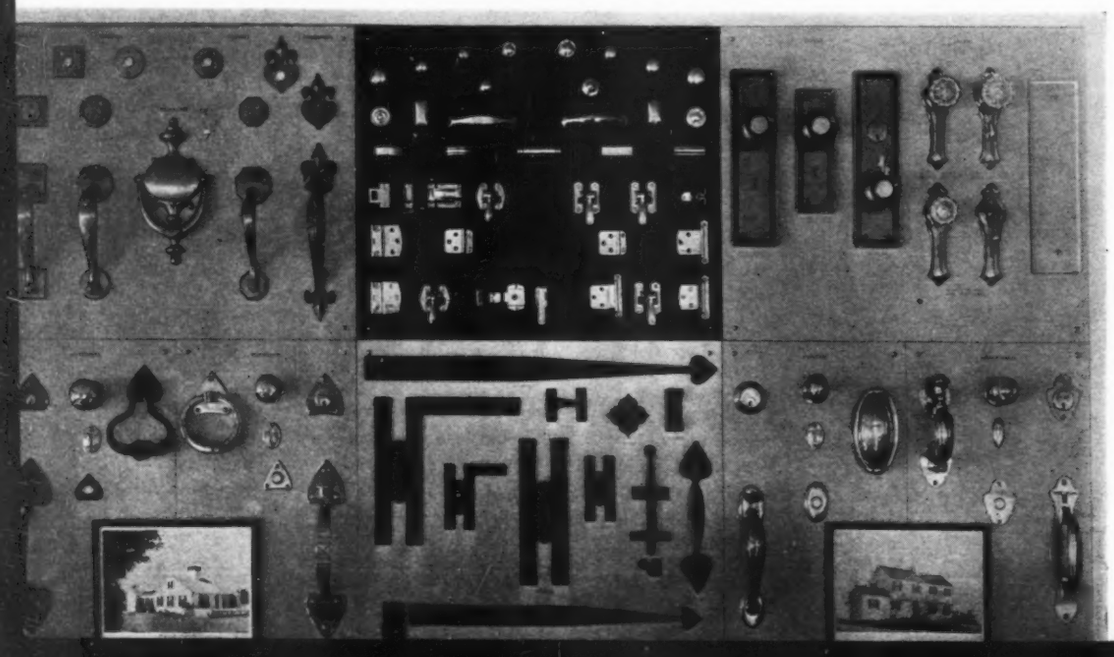


LEFT: New tubular latch door set in black and chrome; RIGHT: thumb latch set with color inlays. Both new items which add the sparkle of color to the hardware trim for stock doors.

Definite cost savings in the line of stock doors and their use in small homes are being made by builders who select and utilize door hardware to the best advantage. While butt hinges are standard and three hinges to the door are recommended, the use of ornamental surface hinges and of half-butt hinges is becoming very general. They make a good appearance, are well liked, and do definitely reduce the cost of hanging the doors. The tubular type of door lock is also coming into use, and is a money saver, because it does away with mortising for the lock. You bore two round augur bit holes to install these sets; and the saving is substantial.

Stock doors and good hardware are often merchandised together, and they should be; for each completes and complements the other.

FORGED IRON hardware highlights this English style stock door.



CORRECT HARDWARE is demonstrated in this wall panel display by a New England lumberman. Many retail dealers are offering the double service of well designed hardware and authentic stock doors—an important combination for today's building needs.

New Economy in Hanging Doors

"Frame the Opening to the Door—Not the Door to the Opening"

Advises C. V. OLSON, Carpenter Instructor, Lane Tech.

THE typical method for hanging a door has been to fit the door to the opening. Today with doors delivered to the job perfectly square and the edges straight and square, it is possible to reverse this order and fit the opening to the door.

To hang this door properly will not require any change in the method of placing studs or changing the usual allowance of 2½" over the door measurement for the partition stud opening. We all know that, regardless of careful measurements, exacting plumb and leveling of our frame openings, we will find a few which will be out of plumb, or, perhaps due to lumber used, some adjustment must be made when setting the jambs.

To swing freely the door must hang on a vertical axis. When pins on the hinges are not in line with this verticle axis the door becomes what is known as hinge bound. This condition has a tendency to put a strain on the jamb and hinges, and the door will not stay closed without force or a catch to hold it; thus it is not permitted to swing free. When jambs are placed out of plumb the door will have a tendency to swing closed or to open, depending on the direction that the jamb is out of plumb. From this we can understand that, as the hinges are gaged from the edge of the jamb it is important to have the hinge jamb plumb in all directions.

The method I am suggesting will require the jamb to be set at the time the door is hung. This can be done as readily as setting the jamb by itself; thereby doing away with cutting, planning or other operation necessary to fit a door. A neat job of hinging is accomplished for we can hinge the door, and jamb, before they are set.

TOOLS AND MATERIAL NEEDED:

A 10 point crosscut saw, hammer, nail-set, hand-drill and an assortment of small bits, 1½" or 2" butt chisel, butt gage, automatic screw driver, try square, dividers, a 24" level (in perfect condition as no guess work can be allowed if a perfect job is expected), a sharp hard pencil, 5' or 6' rule. A jack plane may be needed for jambs if there be any variation.

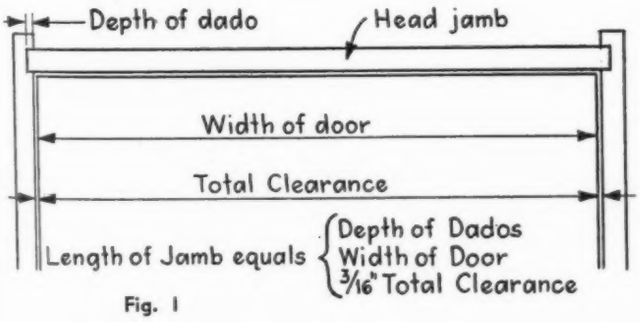


Fig. 1

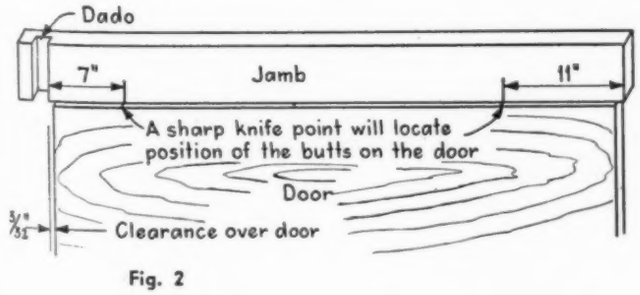


Fig. 2

Make a straight edge of straight grained pine about 4" wide being sure the edges are straight and parallel. To this apply an adjustable level glass. With the aid of the 24" level adjust the level glass on the straight edge until you have a perfect plumb stick. A large hole behind the level glass may aid you in reading the glass.

Have sufficient material on hand for blocking and also plenty of wood shingles for wedges.

The tools listed above are those needed to accomplish the job under ideal conditions but you may need even such tools as a hand axe to chop away part of some jamb buck to get enough clearance. It is assumed you will have the usual variety of finishing and common nails, sawhorse, etc.

The operations in their order of procedure are as follows:

1. Level the floor across the door opening to determine any variation in floor heights at the points where jamb rests on floor.
   Any variation here must be allowed in the length of the jambs so as to bring the head jamb level.
2. Cut the head jamb with both ends perfectly square having allowed the width of the door plus the depth of both dados and a full 1/16" for door clearance. See fig. 1.
3. From the lower edge of the dado measure a distance equal to the height of the door, adding the clearance wanted under the door. Mark and cut square.
   The clearance under the door is usually 5/8", but if a threshold or rugs are to be used, such clearance must be allowed.
4. On the opposite jamb, mark the same length and make any allowance for floor variation as determined in Operation 1.

We are now ready to lay out the mortises for the door butts on both the jamb and the door. The usual measurement for these are 7" from the top of door to the top of the upper hinge and 11" from the floor to the bottom of the lower hinge.

5. Lay out the location of the butts on the jamb first. Then by laying the edge of the jamb on the edge of the door, allowing 3/32" for clearance on top, transfer the hinge location to the door edge by a sharp knife mark. See fig. 2.
6. Having located the position of the butts the complete layout can be made in the usual manner with a half butt for length of mortise and the gage set for width and depth.
7. Cut out mortises and place butts in position.
   The jamb and door butts should now fit perfectly.
8. Assemble door jamb and place in position.
9. It is important to test the head jamb for level; for if any adjustment is necessary it should be done by cutting the lower end of the jamb of the high side before any wedging or nailing is done.
10. Block and wedge the jamb in position placing

blocking back of dados so as to hold the head jamb in proper location, yet leave the jamb free enough to be moved for plumb.

Before nailing be sure you have allowed enough clearance to permit jambs to be plumbed.

11. Plumb and block the jamb on the lock side and nail. Be sure this is perfectly straight and plumb.
12. Make a spreader to lay on the floor between the jambs. It should be $\frac{1}{16}$" longer than the width on top and thin enough to lie under the door when in position. Method of nailing see fig. 3.
13. With the spreader in position block and wedge the hinge jamb at the floor, but do not nail.

This is placed only to hold the jamb in position while adjusting jambs to the door. The hinge jamb is still loose.

14. Hang door on the butts and close.
15. A shingle end can be used as a clearance gage which should not be less than $\frac{1}{8}$"; as these doors are left square on the edge they will require space to swing.

This clearance is not objectionable, as the edge of the door is absolutely straight and as we are able to adjust our jamb to conform to it, it makes a very workmanlike job. If, however, this is not desired the door edge will have to be planed on a bevel and the jamb pushed closer. This will not make more than 1/32" difference.

16. With the shingle gage between the door and jamb of the lock side and opposite the lower hinge, block and wedge the butt jamb directly behind the lower hinge forcing the door to hold firmly the clearance gage between the door and jamb; now nail blocking and jamb by toe-nailing through jamb.

Repeat above, blocking back of the upper hinge.

17. The jamb should now be inspected and any adjustment for clearance can be made by blocking and nailing.

The above completes the hanging of the door; but when casing this opening, the casing should be adjusted for straight by nailing to the studding first. Never drive a nail through the casing to the jamb until casing is firmly held in position otherwise.

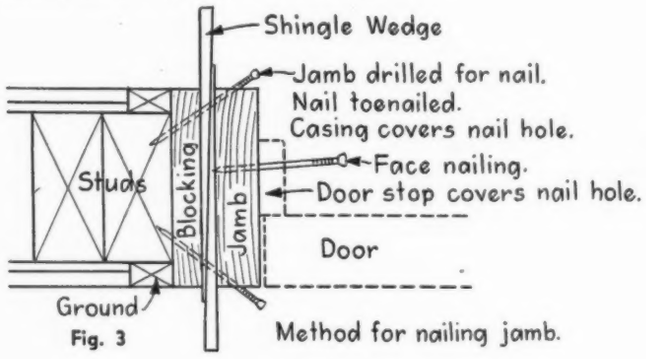


Fig. 3 Method for nailing jamb.

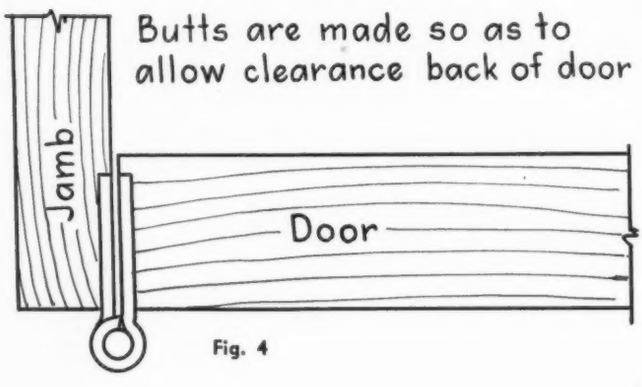


Fig. 4

Casings are very apt to be bent or twisted and if nailed to the jamb before they are straightened it may pull the jamb out of line and thus ruin the job of jamb setting.

By suggesting the above method, it is not to give the impression that this type of door can not be hung by the methods used previously; but if this is done, be sure to allow $\frac{3}{16}$" clearance above the door width-size. Then hang the door before the casings are in place. If then, some adjustment is necessary it would be possible to make them.

Where we have a number of these doors to hang, the labor saving is a great factor. It is possible, because of the exactness of dimensions, to use templates, jigs and other labor saving methods.

When these doors are delivered on the job, they can be placed in one spot and any foreman can devise a system by which the doors and jambs can be mortised for butts and locks. Doors are hung either right or left hand. Therefore, by checking the plans a list can be made showing the exact number of doors of each size that are to be right or left. This then would apply to the jambs as well. The equipment would then be at one place and would not have to be moved about the building. This in itself is a great labor saver.

Door Jambs and Trim

THERE are two principal types of door jambs—the so-called rabbeted type in which stock approximately 1⅜ inch in thickness is rabbeted on one or both sides to receive a door (Fig. 5-B), or the type which is made of two pieces and may be distinguished as the built-up type (Fig. 5-A). It is made of a piece of 1-inch dressed lumber which forms the jamb to which is nailed a stop bead, the two members forming a rabbet to receive the door. As an alternative, the jamb is often ploughed to receive the stop bead.

Here is a tip for fitting outside door jams: A very common error where no sills are supplied, such as on masonry walls, is that the carpenter cuts the jams too short without allowance for threshold, thus making it necessary to cut considerable off the door and spoiling its appearance.

Door trim is molded material applied to the edge of the door jamb and nailed against the plaster to provide a suitable finish around door openings.

There are two methods of finishing the base or bottom ends of door trim, with or without plinth blocks. The plinth provides a base on which the trim may rest and also provides a stop against which the baseboard and moulding may be cut. It is generally thicker than the trim and thicker than the base members. If the door trim is at least as thick as, or preferably a little thicker than, the baseboard, plinth blocks may be omitted unless personal taste or preference dictates otherwise.

Connections at the upper corners of both door and window trim may be divided into two types—those with mitered corners and those with square-cut connections. The modern tendency is to use narrow trim, carrying it not only over the top of the door and down the sides but continuing it in a slightly different form as a baseboard.

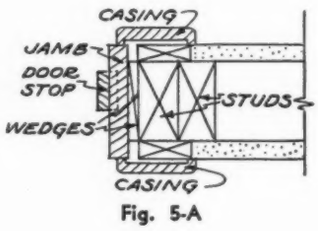


Fig. 5-A

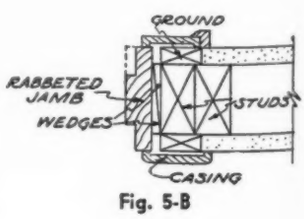


Fig. 5-B

Stock Mirrored Doors Worth Looking Into

By EARL AIKEN

MORE MIRROR doors is the present trend in homes. Here are a pair used in a well-designed Detroit (Mich.) home to connect living room and library.

THE alert builder of today, as well as the trend-minded housewife, is capitalizing on the fact that we have walked through and beyond the Looking Glass era.

No longer does he, nor the prospective home owner, regard a mirror as merely something to look at while shaving or arranging m'lady's hair. Improvements in flat glass and new conceptions of its wide range of possibilities in mirrored form in the home have created new thinking in building procedure.

Full-length built-in door mirrors, for example, are enjoying a vogue that is bringing new-found enjoyment in the home, and added revenue for the builder and the lumber dealer who stock and promote such doors.

Many nationally known home building contractors have been scoring repeatedly by including several built-in full length door mirrors in their building plans. Quicker sales more and more are being traced to the fact that some certain dwelling sold far more readily than one its almost exact duplicate by the fact that it featured several built-in full-length door mirrors.

Magic that catches the eye of the house-shopping couple is wrought by utilizing stock doors in different rooms to gain several distinctive advantages. A recent survey disclosed a variety of placements to achieve specific results. Among the more noteworthy are the following:

Where to Use Mirror Doors

1. A full-length mirrored door of polished plate glass in the door of the hallway closet. Reasons: A housewife, about to greet guests, has an opportunity for a quick final inspection of her dress or hair before opening the door; upon leaving for a shopping trip or some other visit away from home, such a mirror provides a final opportunity for her—or any member of the family—to make sure she is "looking her best."
2. Full-length mirror in the bedroom door. Reason: its perfect utility for dressing or "trying on" new clothing; its ability to add cheer and spaciousness to the room, especially if its placement is in such manner as to reflect an outdoor scene.
3. Triple-mirrored doors in the bedroom. This has become one of the most popular applications of stock doors where a full-length built-in wall mirror is flanked on both sides by full-length mirrors built into closet doors. The sales strategy of such an arrangement of stock doors is invaluable in dwellings of most any price range.
4. Hinged mirrors at both sides of a full-length built-in mirrored closet door. This triple-mirror combination built into one door is rapidly increasing in popularity.
5. Full-length door mirror in the bathroom. It is unquestionably one of the most popular features of today's modern home.
6. Full-length mirrors on doors opening to a built-in bed compartment in the small home or small apartment.
7. Mirrored doors opening into linen closets.

With manufacturers supplying stock doors with beading and paneling especially to attach mirrors locally, builders are able to provide stock mirror doors at prices far more advantageous to the consumer than would otherwise be possible.

Decorative Mirrors in Color

In considering a generous use of stock doors with full-length mirrors to increase the salability of a house or apartment, builders should always keep in mind the decorative possibilities and plan to place such doors as strategically as possible to gain every advantage toward making each room more attractive.

The gleaming beauty of polished plate glass is, of course, the most desirable for mirror purposes, and today plate glass is available in a *variety of colors* so that fascinating decorative achievements are easily attainable.

There is being produced, for instance, plate glass in an exceptionally striking peach color, and, more recently, a golden plate glass that can be mirrored with the ordinary silvering method to obtain the effect of the costly gold-leaf mirrors.

Applications such as outlined are practical for the small as well as the large house, and because stock mirrored doors are easily avialable through the local lumber dealers, such built-in features are particularly worthy of consideration in modernization work.

It should be pointed out to prospective home owners that stock doors with built-in mirrors are considerably more economical if included in the original specifications. Costs are higher, with fewer sales, when the prospect is permitted to take the attitude, "Well, I can add them later."

Public appreciation of the desirability of glass in the home, especially in the form of mirrors, is unquestioned today. That is why the aggressive builder is utilizing stock mirrored doors as stock procedure in boosting his own stock as a successful contractor.

Doors for the Garage

Improved, Easy-Working Stock Doors and Hardware Make the Present-day Garage a Pleasure to Use

THE most important part of the garage is the working part—the garage door. Many of the latest home designs call for the attached garage or built-in motor room to be placed on the street front; and this gives the *garage door* an additional responsibility to be not only storm-tight and easy to operate, but also of good architectural appearance.

The manufacturers of stock doors have rallied to this situation with a very complete line of standardized garage doors in a wide variety of designs and types. Some are for hinged and roller track operation, others for one-piece upward-acting use, and still others for the section overhead type of door.

Garage doors are manufactured in large quantities, and are well made and economically priced. The large production items are of Douglas fir or of pine. Both veneered panels and solid panels are employed, and some are of V-joint construction built up of tongue and groove stock. Door panels are mostly lighted, with glass units runnng 2, 4, 6 and 8 lights to the door. A 6-panel Colonial door without lights is, however, a popular number.

While the trend in garages the last few years has all been toward the upward-acting type, the stock door manufacturers have found a continuing demand for the conventional designs of doors suitable for either a hinge suspension or for use with common types of track hardware.

The upward-acting type of door is, however, coming to be more and more expected, so that not only are most new jobs today being equipped with these upward-acting doors, but also many old garages are being remodeled and doors re-hung to follow this popular trend.

The pioneer merchandisers in this field of better garage doors have been the manufacturers of the "Overhead Door." With a nation-wide sales and installing organization, "Overhead" has been a powerful influence to introduce and popularize the counter-balanced and lift-up type of door. Ease of operation, freedom from snow and ice troubles in winter weather, snug protection for the car, and distinguished architectural appearance have been the chief reasons why this type of door has come into such wide use.

The other general type of upward-acting door is the one-piece door which operates "up and over." Several ingenious types of hardware are used to install this type of door. These garage doors are carried in stock, being produced in large quantities by the large door factories and the hardware sets are also stock items.

Electric door openers to control the garage door from the driveway are now quite general. The radio-controlled garage door also is often seen. This door is most ingenious; it is actuated electrically by radio or magnetic wave from the driver's seat of the automobile.

The built-in or attached garage is decidedly the thing today. Home owners appreciate the convenience, security and comfort of the house-heated garage or motor room. This is often located in what otherwise would be basement space. On sloping or hilly sites in particular, the plan of the basement garage works in very well. However, no matter where the garage is placed, if it is a part of the house, it is bound to be prominent and conspicuous so that a little extra care or expense in providing a suitable door is well justified.

Fortunately for the home owner today, the garage door producers, both those manufacturing the door itself and those furnishing the hardware on which it is mounted or hung, are doing such a good job in manufacturing and distributing their lines that the cost of the best in garage doors is really nominal.

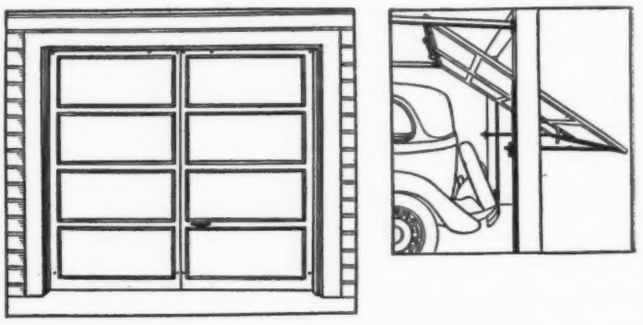
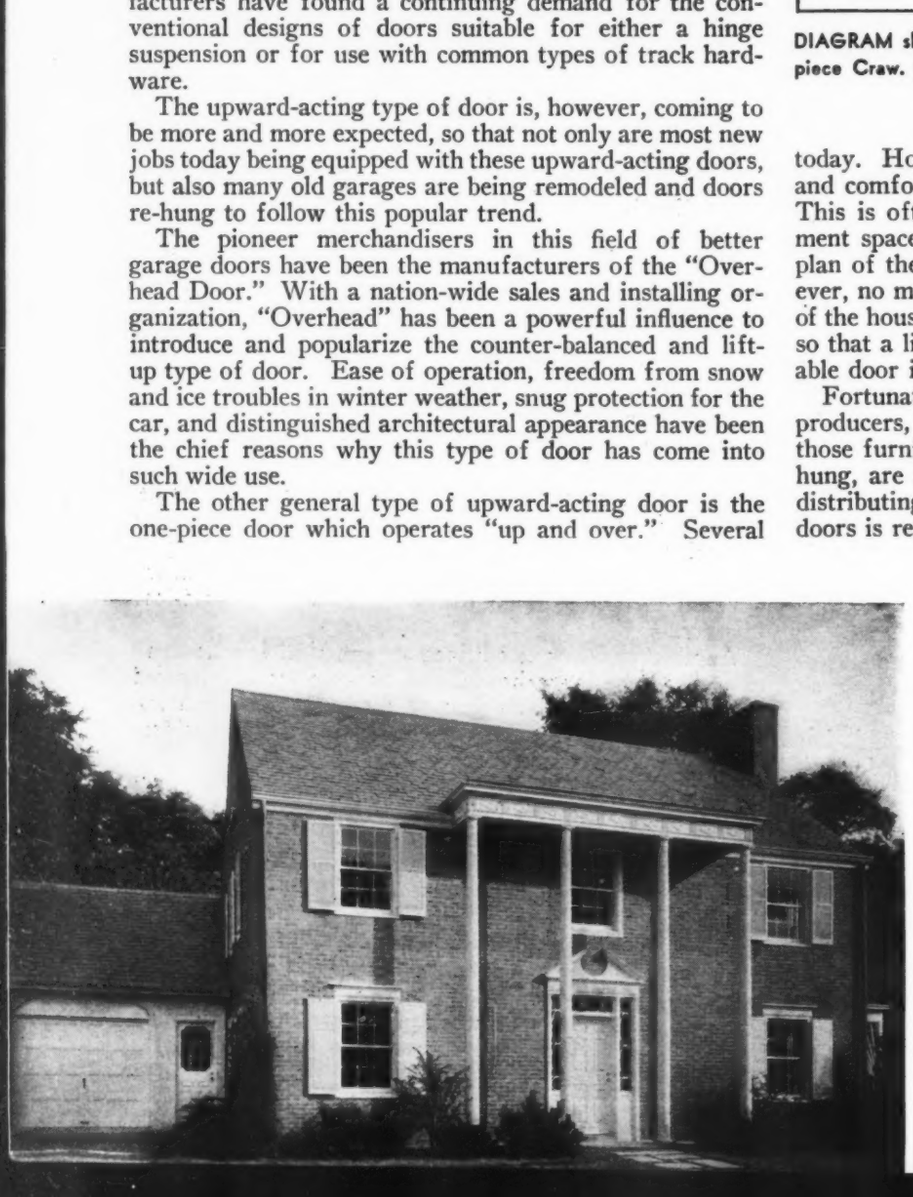


DIAGRAM showing front view and method of operation of the one-piece Craw. Fir-Door, a popular up and over model.



HARMONIOUSLY designed home with attached garage at Scarsdale, N.Y.; Verna Cook Salomonsky, Architect; 8'x7' stock "Overhead" door used.

Proper Care of Doors

How to Avoid Door and Millwork Trouble: 1, While House is Under Construction; 2, After Home is in Use

AS AN important contribution to this stock door discussion, one of the large companies has called attention to certain sections of its questions and answers booklet, "The Care of Woodwork," that apply particularly to doors. In commenting on this, the manufacturer writes:

"You will find in this booklet much discussion on doors of various types and what happens to them after installation, so I feel you will be doing a big favor to your readers if you will impress upon the dealer and the builder the absolute necessity for advising a home owner on how woodwork should be cared for after installation —particularly doors, trim, stairs, cabinet work, etc.

"It costs manufacturers and jobbers a great deal of money every year in traveling expenses, letters, and salesmen's calls to repair or find out what's wrong with faulty woodwork—when generally it's the fault of the builder who installed it or the dealer who sold it. If the builder installs woodwork in a house that is not thoroughly dried out, you know the result."

Here are the sections in question and answer form:

Moisture Content of Wood

Q. Under What Conditions May Woodwork Safely Be Delivered to a Job?

A. Woodwork to be warehoused properly, should be under as nearly identical conditions as will prevail in the building in which it will be installed. Everyone knows that a new building will be more damp during construction than after it has become "seasoned." Woodwork should not be delivered to a building until it has been properly conditioned to receive it. Positively keep it off the premises during, and for some time after, plastering. Never store it in a basement. Likewise it should not be delivered during wet weather unless completely protected. Some dealers wisely refuse to deliver woodwork until the house is tested and relative humidity has been reduced to a safe value—at least 50% in summer or 35% in winter.

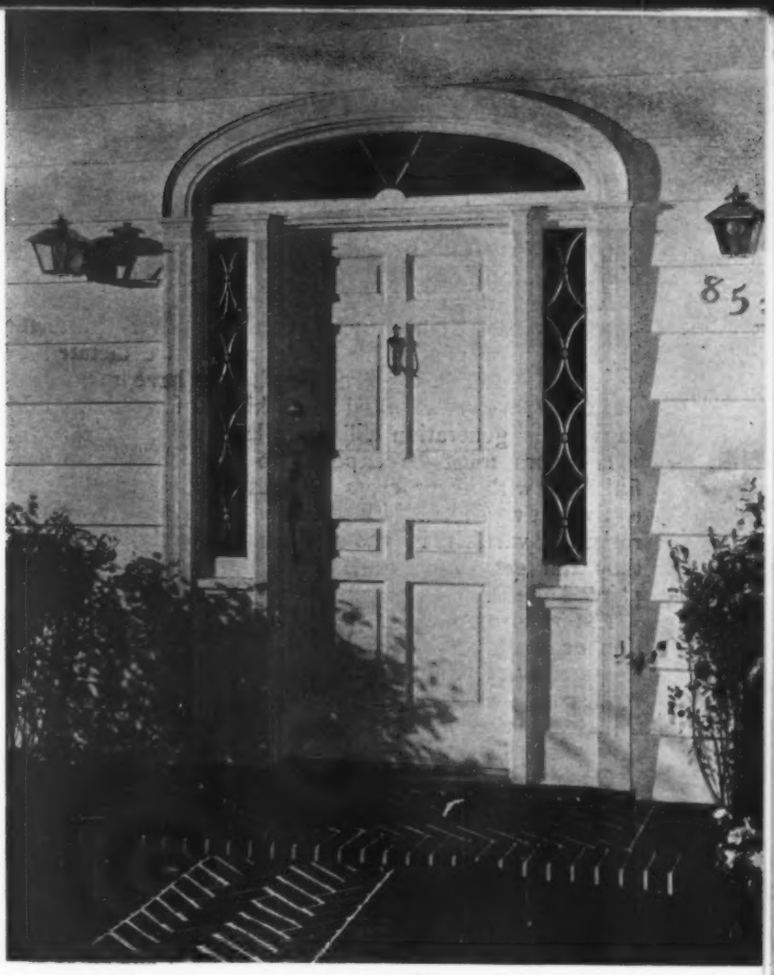
Q. Should Plaster Be Dry Before Trim and Doors Are Installed?

A. Absolutely. Is there any reason except haste and carelessness for doing it any other way?

Trim and doors fitted in a wet building will show open joints when the house and woodwork dry out. There may also be trouble with raised grain caused by excessive dampness. Another danger, especially in cold weather, is that the water given off by the wet plaster will condense on outside doors and on windows, and cause irreparable damage to doors and sash before they get their protective coatings of paint or varnish. No manufacturer or dealer in woodwork should be blamed for trouble which will follow installation of woodwork in buildings wet from plaster or concrete floors.

Q. To What Moisture Content Should Woodwork Be Dried?

A. Woodwork should be dried to a moisture content which corresponds to the average atmospheric moisture content of the locality where it is installed. Temperatures and humidities vary greatly throughout the U. S. In this case we are confining our discussion to interior woodwork, which is entirely protected from direct moisture.



A CHOICE entrance door like this deserves good treatment. It will serve long and well if properly cared for.

In localities where home heating is required we are apt to encounter a large variety of conditions during the winter. Often homes are heated with air conditions that may dry the woodwork to as low as 4% or 5% moisture content. Again, enough moisture may be added as to cause condensation troubles at the windows. (This usually occurs before the woodwork shows distress.) The highest moisture content of woodwork generally occurs during prolonged damp weather in summer. This may reach 13% to 15% but rarely any higher. An average moisture content for woodwork for most of the U. S. would run between 8% to 11%. For localities of extreme conditions the woodwork should be "tempered" for a few weeks before installation, for best results. The smaller the seasonal range of moisture content variation can be kept the better it will be for the woodwork.

Q. Can Manufacturer of Woodwork Control Moisture Content?

A. Yes—as long as woodwork does not leave his premises a manufacturer may determine the moisture content within reasonable limits.

But, as soon as it leaves his care and supervision his best wishes cannot prevail over what may happen.

Wood will always try to contain an amount of moisture corresponding to the moisture in the air surrounding it. If the manufacturer could guarantee that his woodwork would not be rained on, if he could send a permanent supply of properly humidified air along with it, if he could be sure when it is unpacked that it is not installed in a wet house, and if he could control and operate the heating or air conditioning plant in the home, then he could really begin to do a job at moisture control in woodwork. Until then, he must have the co-operation of everyone all along the line.

Proper Handling of Doors

Q. What Can Be Done To Protect Doors From Unfavorable Weather?

A. Keep them inside the house.

A few years back most entrance doors were protected by a stoop or porch. That was a practice dictated by experience. In recent years many houses have no porches, and the doors are exposed to all kinds of weather. Perhaps a new generation will again learn by experience.

If doors must be exposed to the weather, proper finishing with three coats of lead and oil paint or an equivalent treatment with stain and spar or other weather resisting varnish is about the best surface covering they can get. Tops and bottoms of doors should be painted the same as the outside face.

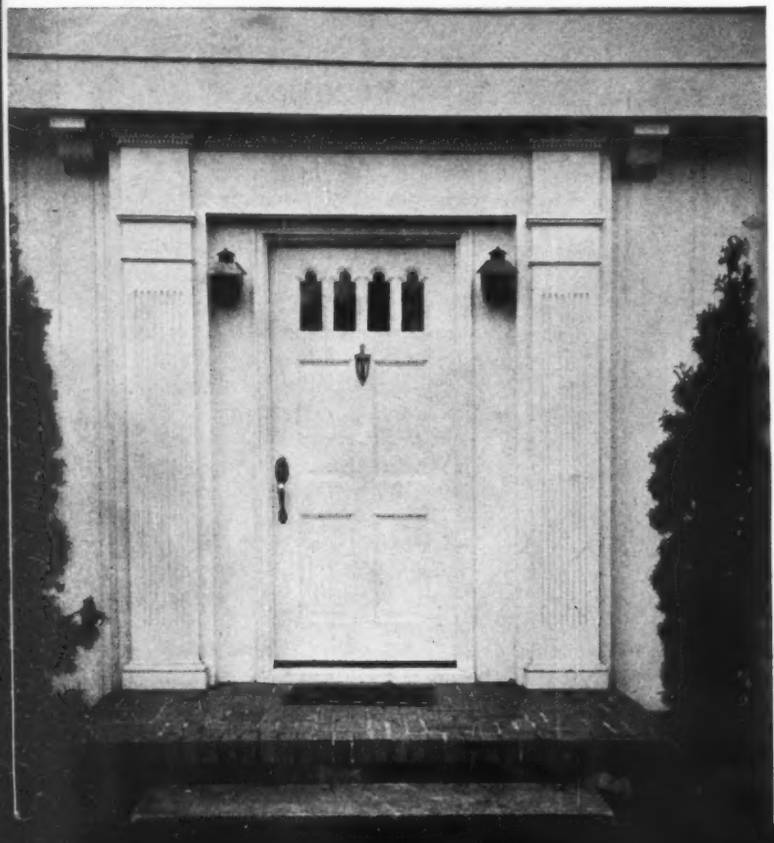
Exterior exposure can be reduced by using combination or storm doors. It is extremely hard on exterior doors to have winter conditions on one side and heated room conditions on the other. Any sort of recess, alcove, or shelter that tends to keep weather extremes from the door is beneficial.

Q. How Can Door Frames Be Checked to Assure Straight Doors?

A. If a door when hung does not fit the frame it will undoubtedly soon become warped. The fault is quite often in the frame instead of the door. Be sure that the frame is straight.

To check a door frame before hanging the door the best procedure is to use a reliable straight edge.

1. Hold it against the edge of the jambs to see if both jambs are straight.
2. Hold it against the inside face of each jamb and near both edges.
3. By use of accurate carpenter's level held on straight edge make sure all above faces are plumb. Keep same side of straight edge and level always pointing same direction (north, south, etc.). This will avoid possibility of error in tools permitting a warped frame to appear straight, or a straight one to appear warped.
4. In absence of a level or straight edge an ordinary line and plumb bob can be used with excellent results. Sight the jamb to see if it coincides with the line.



THE CHARM of any home begins with the entrance, and this door helps to make this Tacoma home cheerful and inviting to the owner and visitor alike.

Q. How Much Clearance Should Doors and Windows Have When Fitted?

A. First answer these questions.

How much variation is there in the setting of the frames? How wet or dry are the frames? Are the doors or sash thoroughly dry? What season of the year is it? Is it dry or damp in your locality? What sort of heating do you use?—and a dozen others.

A sash will operate nicely with about 1/16″ total clearance but, since this will vary with shrink or swell, more clearance is required in fitting. If installed when wet, then the sash may be fitted closer than when all parts are dry. Allowance for paint in the runs should also be made. It is possible to have as much as 3/16″ total variation in sash and frame due to shrink and swell. With proper types of weatherstripping more clearance can and should be provided. ⅛″ to 3/16″ is fair practice.

Doors offer a problem just as complex. Doors may shrink or swell as much as 5/16″ or more from extreme damp conditions to a baked out winter condition with dry heat. These, of course, are extreme conditions but they are not uncommon where no efforts at regulation are made. If 1/16″ clearance at each side of a door could be maintained on a properly beveled door it would be ideal. If jambs are damp from plastering, the doors may well be hung with about this clearance.

Q. How Much Can A Door Be Cut Down Without Injuring It?

A. This depends on how much door you have to start with. Usually it should be left large enough to fit the door frame and enough of the stiles left to properly receive the hinges and mortise locks.

On panel doors more materials can be cut off solid stiles and rails than where veneered stiles or rails are used. In general, we would say that any panel door should not be trimmed down from one stock size to the next—usually 2″ in width and 2″ in height. Cutting down a door will most certainly change its proportion and alter its architectural design. Cutting into dowels is definitely damaging.

Flat slab doors may be so built that they can be trimmed about 3″ on all four edges and tops made rounded, Gothic, etc., but do not take it for granted that all slab doors are built that way.

The safest rule is to fit the door only to the size of frame for which it is built.

Q. How Should A Door Be Hung to Offer the Greatest Protection Against Warping?

A. Almost without exception any door will have some slight bow or curvature. It should not be alarming to find that when a straight edge is placed across a face of the door there may be as much as 1/32″ or 1/16″ of daylight showing under the center. Association rules do not consider anything up to ¼″ bow in the door height as a defect.

If any such slight curving is present select the side that shows hollow and always if possible, hang the door so that side will be toward the door stops on the jamb. Also the most bowed side should be the hinge side if possible. Every door should have 3 hinges. Be sure they are properly attached to the jamb so all the pins are in an exact straight vertical line. Also, be sure that on the hinge side there is enough clearance to prevent binding against the jamb or stop. Mortise the lock exactly in the center of the stile and do not cut the mortise over width. Put on the strike plate to give about 1/32″ play.

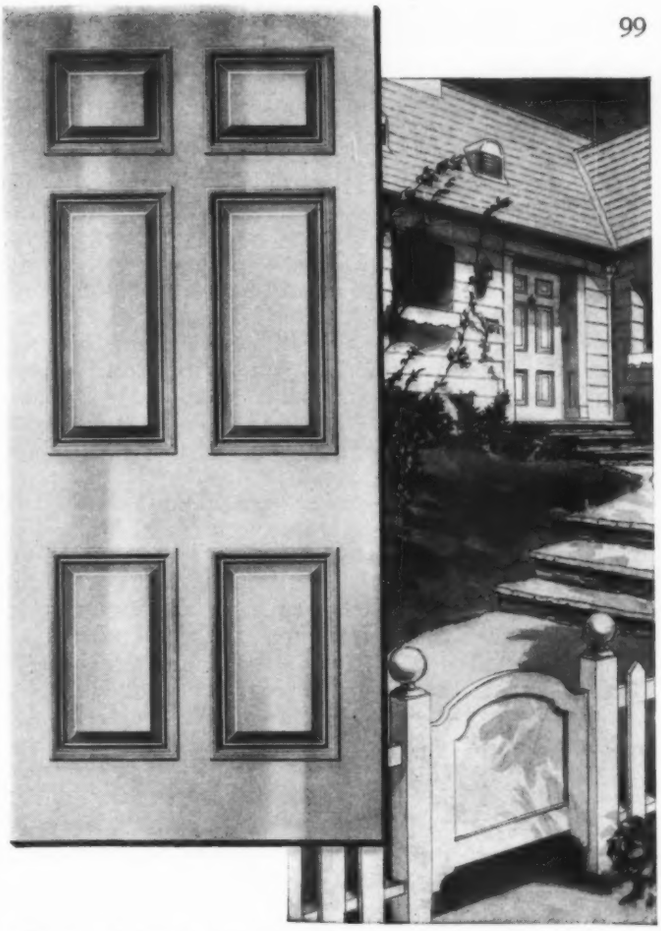
Fir Doors Are Now Factory-Fitted

Front doors carrying Institute "Tru-Fit" mark are now offered through woodwork Jobbers and dealers

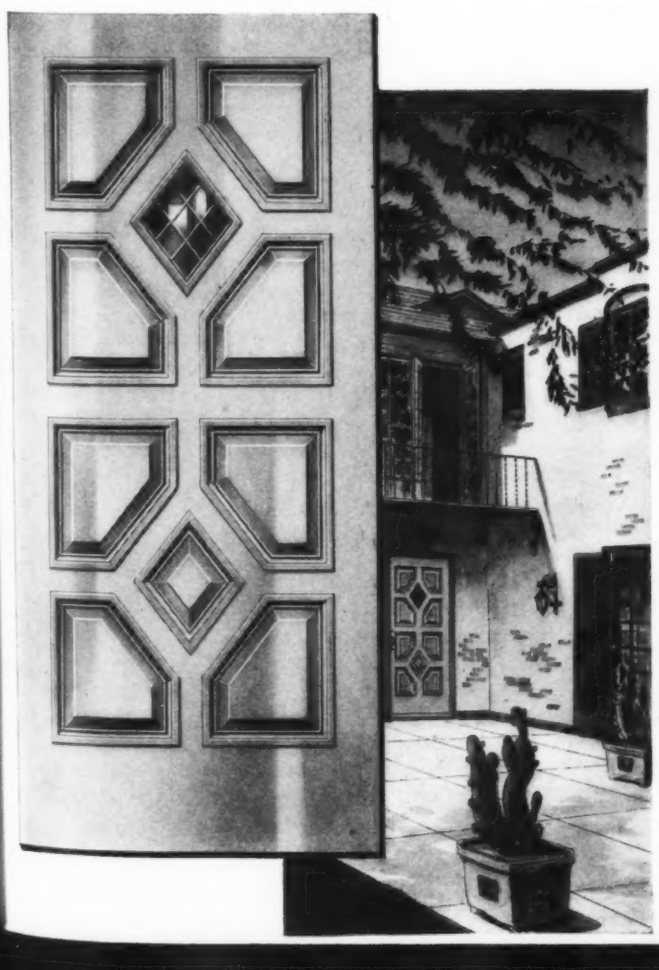
DISTINCTIVE in design, sturdy and durable in construction, the new line of Douglas fir "Tru-Fit" front doors are now available to builders everywhere as another important tool with which the men of the building industry may meet the insistent demand for "Better Homes for Less." These doors, which are prefitted for standard openings and require no cutting, trimming or fitting on the job, are manufactured by all members of the Fir Door Institute (Tacoma, Wash.) and sold through sash and door distributors and lumber dealers under the trade marked name "Tru-Fit."

Recognizing that the excessive amount of sawing and planing necessary to fit the ordinary door to its frame was an expense to the builder and his client that should be eliminated, the fir door industry determined to assist in the lowering of building costs by factory-fitting this new line of beautiful doors. Since the high speed saws can trim the edges and sides exactly to size much more neatly and quickly than it could be done by the carpenter on the job, this step will immediately make possible savings, said to amount to 75c to $1.50 per opening when these factory-fitted doors are used.

The preparation of these doors at the factory includes "easing" of the sides of the door to a rounded, smooth finish, individual wrapping and application of scuffer strips, top and bottom, to prevent damage to the doors in transit. The mark "Tru-Fit" is stenciled on each wrapper to permit ready identification by buyers.



DESIGN FDI 2000, the ever-popular six-panel Colonial is one of the new "Tru-Fit" Douglas fir doors, manufactured by members of the newly-formed Fir Door Institute.



DESIGN FDI 2040, another favorite in the Tru-Fit line. All these fir doors are prefitted, individually-packed and scuffer-stripped for protection.

These factory-fitted doors, which are known as the FDI 2000 series for trade recognition, are manufactured in a wide variety of designs, thereby permitting almost universal adaptation to any architectural style. Some of these doors are here pictured in typical entrances as suggestions to builders; but infinite variations of the architectural effect are possible with any one door: Lights in many shapes may be cut-in to meet individual tastes or needs; molding may be planted on the slab or flush doors to conform with entrance requirements; hardware may be added to give the door its final finished appearance.

If the number of designs offered in this new line lean toward any one architectural style, it is probably that of the Modern Colonial, since this trend has become pronounced due to the Williamsburg influence. However, even with this, there are attractive, distinctive doors in the "Tru-Fit" fir door line to harmonize with any architectural type, including Cape Cod, Dutch Colonial, Monterey, Modern, and Ultra-Modern, Georgian, English, and others.

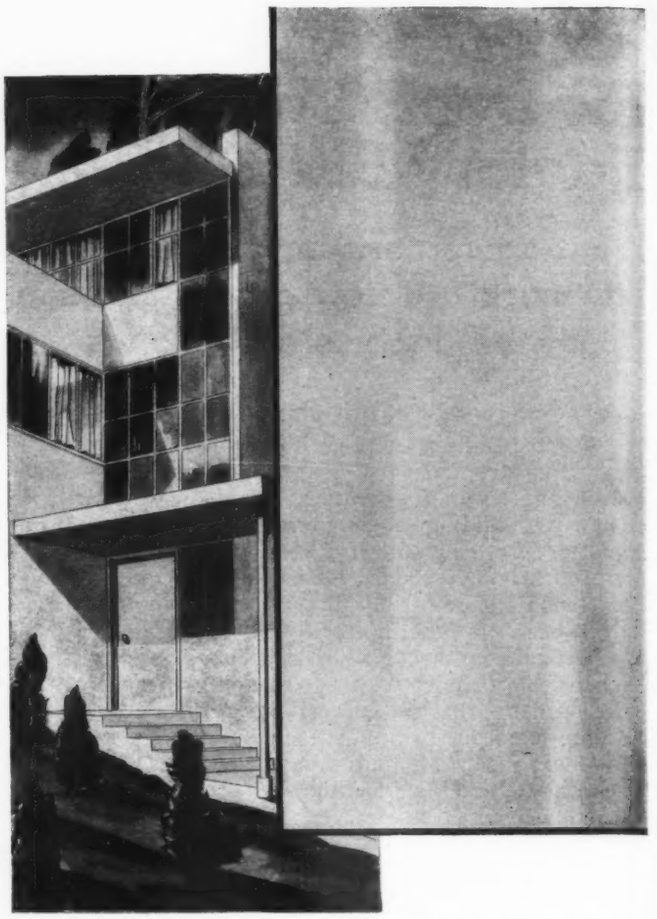
This new line of factory-fitted doors is manufactured from durable, all-heartwood, vertical-grain, soft, old-growth Douglas fir and are sturdy as this famous Pacific Northwest wood can make them. "Old-growth" Douglas fir is a term applied to distinguish the wood developed in the later stages of the tree's growth when it is generally free from knots; of medium density with close, uniformly spaced growth rings; and of a uniform color. The abnormal per-

centage of heartwood in Douglas fir is nature's contribution to its high durability. This, added to the fact that Douglas fir is second to none in structural strength, makes it ideal for the manufacture of doors.

Douglas fir doors bearing the Fir Door Institute's "Tru-Fit" mark will take any finish if competent workmanship is employed in the process. In order to assure uniform quality of finish, a label with suggested paint technique and formulae is inserted under the cross rail of each door. The formulae given are those recommended by leading paint manufacturers and the National Lead Industries, Inc., whose experimentations in finishing all types of woods have extended over many years. Any painter, following these instructions with ordinary care, can achieve any one of many attractive finishes on these doors.

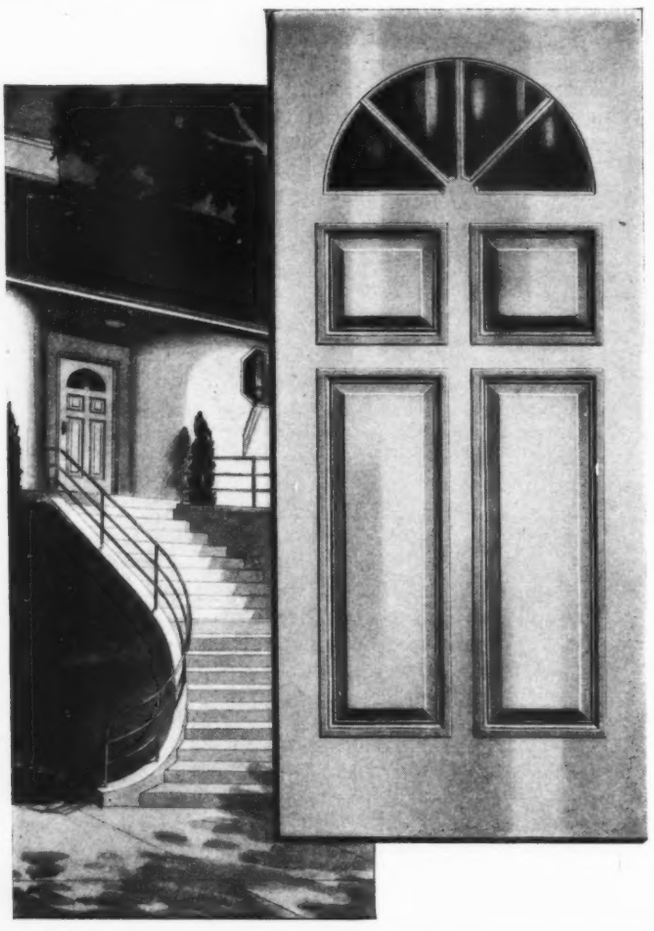
The prefitting, edge-easing, wrapping and scuffer-stripping of these doors come at no increase in the cost of the doors. Other stock fir doors which are not labeled "Tru-Fit" may also be factory-fitted and scuffer-stripped at a very small charge per opening, upon order. This charge, which is purely nominal, would be considerably more than offset by the subsequent savings to the builder in eliminating cutting, fitting and planing costs, always necessary when doors are not prefitted.

Dealer helps, including folders and mailing pieces showing the complete line of "Tru-Fit" fir entrance doors are available to dealers and builders through the Fir Door Institute, Tacoma, Washington, a trade promotional Association formed by the following leading manufacturers of Douglas fir doors: Buffelen Lumber & Mfg. Co., Tacoma, Washington; Central Door & Plywood Corp., Portland, Oregon; Clear Fir Lumber Company, Tacoma, Washington; Harbor Plywood Corporation, Hoquiam, Washington; M and M Woodworking Co., Portland, Oregon; Monarch Door & Mfg. Co., Tacoma, Washington; Northwest Door Company, Tacoma, Washington; Wheeler Osgood Sales Corp., Tacoma, Washington, and Robinson Manufacturing Co., Everett, Washington.



DESIGN FDI 2030, the flush door is ideally suited to modern and ultra-modern entrances. It can be given an almost limitless variety of individual treatments.

DESIGN FDI 2020, the fantail Colonial offers builders possibilities as an attractive, versatile door, which adds to the architectural beauty of any entrance.



New Commercial Standards for Fir Garage Doors

THE U. S. Bureau of Standard's "Commercial Standard CS73-38" which went into effect on June 30, 1938, presents the following specifications for stock fir garage doors:

"Manufactured primarily for paint finish in one quality only, which is described below.

"*Stiles and rails*—This stock shall be substantially all vertical grain, with accumulation of coarse or mixed grain permitted. It shall be sound in all respects, and may contain sap, stain, burls, pitch streaks, and neatly repaired pitch seams.

"*Panels—flat veneered*—The standard thickness of 3-ply flat veneered panels shall be ¼-inch after sanding. They shall be of No. 2 door panel grade.

"*Panels—solid raised*—The standard thickness of solid raised panels shall be not more than 9/16-inch before sanding and not less than 7/16-inch after sanding. They may be vertical, slash, or mixed grain, at the option of the manufacturer, and shall conform to the grade of the stiles and rails.

"*Batten garage doors*—The stiles and battens shall have all vertical grain faces, which shall be clear, except that neatly repaired pitch seams, not to exceed 4 inches in length, and at a minimum distance of 2 feet apart either way, will be admitted on each face of the door."

New Commercial Standard, Trade Marks and Specifications for Fir Doors

SIGNALING one of the most progressive steps ever taken in stock door manufacture and marketing, the recent promulgation by the U.S. Bureau of Standards of "Commercial Standard CS 73-38," covering stock fir doors, now offers the builder the opportunity to secure grade marked stock fir doors.

This assurance of uniformity of quality, which is a protection to the builder and consumer alike, is made possible by the adoption, on the part of the members of the Fir Door Institute, of uniform grade marks. These grade marks display the words "Grade A," "Grade B," "Grade C" or "Grade MR," as the case may be, and each is followed by the letters "FDI" denoting membership in the Fir Door Institute. Facsimiles of the four basic grade marks are reproduced below.

The adoption of this Commercial Standard by the manufacturers of Douglas fir doors is said to be the first successful effort to standardize stock door manufacture. It is the basis for common understanding between manufacturers, distributors, and users of stock fir doors; and the general acceptance of the Standard will work to the mutual advantage of all concerned.

The establishment of industry standards arises in no desire to suppress architectural expression; and custom-made doors are, of course, still available from the usual sources. The establishment and adoption of construction standards, together with universally-accepted sizes and layouts, will, however, eliminate many causes of misunderstanding in door marketing which have arisen through the lack of standards. Furthermore, the economies in manufacture and sale through such standardized manufacturing procedure will inevitably redound to the benefit of the ultimate homeowner exactly as happens in the case of any mass-production item.

OFFICIAL Grade Marks for Douglas Fir Doors produced by members of the Fir Door Institute.

The standard provides minimum specifications for grades of stock fir doors in four thicknesses, ¾, 1⅛, 1⅜, and 1¾ inches. It covers construction, defects and the grading tolerances for these requirements. There are Standard Stock Layouts and Designs covered in door sizes ranging as follows:

Cupboard Doors—1′0″ x 1′6″ to 2′0″ x 6′0″
Side Lights— 1′0″ x 6′8″ to 1′6″ x 7′0″
House Doors— 1′6″ x 6′0″ to 3′6″ x 8′0″
Garage Doors— 2′0″ x 7′0″ to 4′0″ x 8′0″

Under the Standard, all the commercial standard fir doors shall be made of kiln-dried, old growth Douglas fir and shall be well manufactured and machined and both faces shall have flat surfaces; that is, with stiles, rails and panels smoothly sanded. Construction requirements provide that doors shall be assembled with fir dowels according to exact specifications designed to assure maximum performance in use.

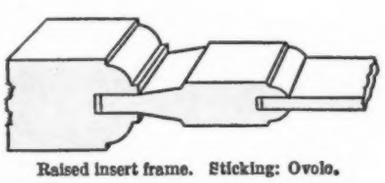
Three-eighths inch "Bead and Cove" or "Ovolo" sticking is used on all standard doors and unless otherwise specified, the "Bead and Cove" will be furnished.

Stock fir doors, under the Standard, are manufactured in the following thicknesses, with a minus tolerance of 1/16″ permissible:

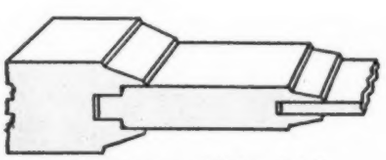
Cupboard Doors—¾ and 1⅛ inches
Side Lights—1⅜ and 1¾ inches
House Doors—1⅛, 1⅜ and 1¾ inches
Garage Doors—1⅛, 1⅜ and 1¾ inches

Doors are graded on both sides or faces in accordance with 4 specified Standard Grades: "A," "B," "C" and "M.R." Standard house doors in "A," "B," and "C" grades are furnished in two thicknesses, 1⅜″ and 1¾″, while doors 1⅛″ thick will be graded "MR" which designates that they are "millrun."

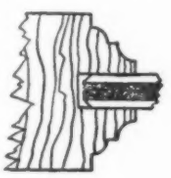
Sidelights and doors of special layout or design are available in the "A" grade only, while cupboard doors are furnished in both "A" and "B" grades. Garage doors, as specified by the Standard, are furnished in only one quality and are manufactured of stock designed primarily for a paint finish.



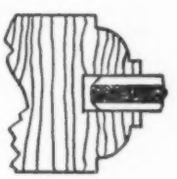
Raised insert frame. Sticking: Ovolo.



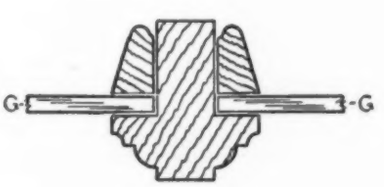
Flat insert frame. Sticking: P & G.



BEAD & COVE STICKING



OVOLO STICKING



STANDARD PATTERN GLASS BEAD

DETAILS of standard Fir Stock Door Construction as specified in the U.S. Bureau of Standards' new publication.

Table of Sizes of Stock Fir Doors

(In Feet and Inches)

Standard Sizes
Cupboard Doors

1–0x1–6	1–0x4–0
1–2	1–2
1–4	1–4
1–6	1–6
1–8	1–8
1–10	1–10
2–0	2–0
1–0x2–0	1–0x4–6
1–2	1–2
1–4	1–4
1–6	1–6
1–8	1–8
1–10	1–10
2–0	2–0
1–0x2–6	1–0x5–0
1–2	1–2
1–4	1–4
1–6	1–6
1–8	1–8
1–10	1–10
2–0	2–0
1–0x3–0	1–0x5–6
1–2	1–2
1–4	1–4
1–6	1–6
1–8	1–8
1–10	1–10
2–0	2–0
1–0x3–6	1–0x6–0
1–2	1–2
1–4	1–4
1–6	1–6
1–8	1–8
1–10	1–10
2–0	2–0

Standard Sizes
House Doors

2–0x6–0	1–6x7–0
2–4	1–8
2–6	1–10
2–8	2–0
3–0	2–2
	2–4
2–6x6–4	2–6
	2–8
1–6x6–6	2–10
1–8	3–0
1–10	3–4
2–0	3–6
2–2	
2–4	2–0x7–6
2–6	2–4
2–8	2–6
3–0	2–8
	2–10
1–6x6–8	3–0
1–8	3–4
1–10	3–6
2–0	
2–2	2–0x8–0
2–4	2–4
2–6	2–6
2–8	2–8
2–10	2–10
3–0	3–0
	3–4
2–0x6–10	3–6
2–2	
2–4	
2–6	
2–8	
2–10	
3–0	

Standard Sizes
Side Lights

10″x6–8
1–0
1–2
1–4
1–6
10″x6–10
1–0
1–2
1–4
1–6
10″x7–0
1–0
1–2
1–4
1–6

Standard Sizes
Garage Doors

2–0x7–0
2–4
2–6
2–8
3–0
3–6
3–9
4–0
2–0x7–6
2–4
2–6
2–8
3–0
3–6
3–9
4–0
2–0x8–0
2–4
2–6
2–8
3–0
3–6
3–9
4–0

Details for the stiles and rails, and for the flat-veneered or raised panels for each of the four grades are specified in Commercial Standard 73-38. Briefiy, the "A" grade is made for all types of finishes, including natural, stain or paint; the "B" grade is recommended primarily for stain or paint finish; and the "C" grade should be specified only when doors are to be painted. The "MR" or "millrun" grade, since it is made up of stock too thin for a standard 1⅜" thickness and available only in 1⅛" thickness, may include an undetermined amount of all or any of the other three grades.

Grade "A" house doors have stiles and rails of 10 per cent vertical grain heartwood, both faces clear, except each may contain one repaired pitch seam on each side not over 3½ inches in length and not extending through. Panels in grade "A" doors are ¼-inch 3-ply flat veneer of No. 1 grade (each face a single piece of heartwood free from defects but permitting inconspicuous well matched small patches not over ⅜" by 2½"); or solid raised panels not more than 9/16 inch thick before sanding, nor less than 7/16 inch thick after sanding, and either all vertical or all slash grain in any one door.

Grade "B" house doors are primarily for paint finish. Stiles and rails have vertical grain faces, sound but may contain sap, slight stains and burls; each may contain two neatly repaired pitch seams not over 9 inches long on each side. Panels in grade "B" are No. 2 door panel grade, 3-ply ¼-inch plywood, or raised panels conforming to grade of stiles and rails.

Grade "C" house doors for paint finish only have stiles and rails of mixed grain and may have any number and size of repaired or other sound defects. Panels are No. 3 door panel grade.

Standard stock layouts and designs are shown in the Fir Stock Door List which is a part of the Commercial Standard as recently issued by the Department of Commerce (February 17). Copies are now available from the Superintendent of Documents, Washington, D.C.

Specifications for Pine Doors

National Door Manufacturers Association Announces Standard Specs. and Construction Details for Stock Solid Doors and Frames

AN IMPORTANT contribution to home building progress and economy has been made by the standardization work of the country's largest producers of Ponderosa Pine Sash, Doors, and Frames and Hardwood Veneered Doors. Through several generations of service to the construction industry, they have developed standards of design, construction, and quality which assure to their users a maximum of utility, beauty, availability, and economy not only in first cost but in maintenance. The National Door Manufacturers Assn., Inc., acting for these member companies, has formulated and now recommends the following architectural specifications and construction details for Pine Doors (both solid and veneered) and Frames:

NOTE: Notes are explanatory or advisory only and should not be included in the specifications.

NOTE: Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.

(1) Material

(1a) All solid doors and frames shall be made of Ponderosa Pine selected for straightness and in strict accordance with the Grading Rules of the National Door Manufacturers Association, Inc.

(1b) Lumber shall be dried to a moisture content of from 8 to 10 per cent before fabrication.

(1c) Frames shall be Grade "A" Quality.

(1d) Doors shall be *(First) (Second) (Third)* Quality.

NOTE: See grading rules, page 106.

(2) Frames

(2a) Door frames shall be of stock design, construction, and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc.

(2b) Frames shall be delivered *(knock down) (completely erected) (except for application of) (exterior trim) (staff beads).*

NOTE: Unless otherwise specified, sills for door frames are furnished in Pine.

(2c) Sills for door frames shall be clear *(Pine) (Oak).*

(2d) Frames shall be preservative treated in accordance with the Preservative Minimum Standards of the National Door Manufacturers Association and shall bear the NDMA Seal of Approval.

(3) Doors

(3a) Doors shall be of stock design and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc. They shall be *(1⅜) (1¾) (specify)* inch thick. A "thickness tolerance" not exceeding 1/16 inch less than the nominal thickness will be allowed.

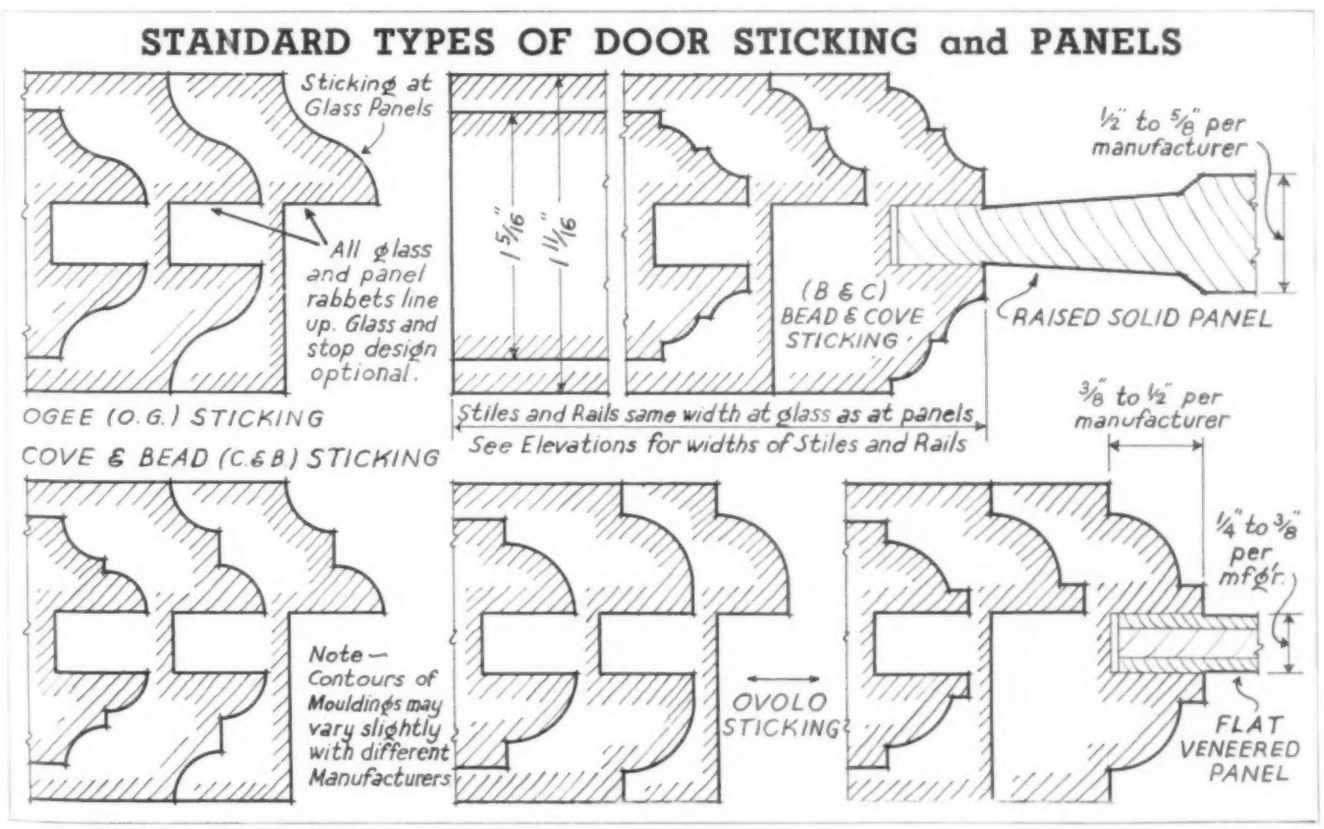
NOTE: Doors can also be made ¾, 1⅛, and 2¼ inch thick.

(3b) Stiles and rails shall have *(specify type)* solid sticking with solid raised panels. All intersections shall be coped with joints well fitted.

NOTE: Unless otherwise specified, stock doors are assembled with hardwood dowels extended into stiles and rails approximately one half the width of the stiles.

(3c) Doors shall be *(describe panel arrangement including glazing requirements).*

NOTE: Unless otherwise specified, glass stops are furnished for all glazed doors. Faces of all doors are machine sanded.



Specifications for Veneered Doors

Standards Announced by the National Door Manufacturers Association Covering Its Members' Lines of Stock Veneered Doors

NOTE: *Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE: *Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.*

(1) Material and Construction

(1a) GENERAL—All doors shall be of size and design as called for on plans *(and details)* constructed in accordance with the standard details of the National Door Manufacturers Association, Inc.

(1a1) All doors shall be constructed of thoroughly seasoned material redried by the door manufacturer before assembly to a proper, uniform moisture content suitable for the climate in which they are to be used.

(1b) GLUE AND GLUING—Glue for all fabrication shall be high grade vegetable glue or water resisting casein glue equally distributed over the surfaces and applied under pressure before "chilling."

(1c) CORES—All cores shall be constructed of soft pine blocks not over 2 inches wide on the face with end joints in adjacent rows well staggered.

(1c1) Outer exposed edges of all stiles and rails shall be finished with a ¾ inch thick strip of same wood as face veneer wood.

(1c2) Cores, after gluing, shall be planed smooth to a uniform thickness.

(1d) SANDING—Faces of all doors shall be smoothly machine sanded with "00" sandpaper.

(2) Interior Stile and Rail Doors

(2a) All cores for stiles and rails shall be finished on panel edges with a ¾ inch thick strip of face veneer wood.

(2b) Stiles and rails shall have *(specify type)* solid sticking.

(2c) Furnish glass stops *(and muntins)* of face veneer wood.

(2d) Face veneers for stiles and rails shall be of *(specify wood)* ⅛ inch thick before sanding.

(2e) Panels shall be of *(three) (five)* ply veneer faced with *(specify wood)* veneer of standard commercial thickness. Grains of the various plies shall alternate in direction.

(2f) All stiles and rails shall be assembled with hard wood dowels not less than ½ inch in diameter by 5 inches long. On rails 6 inches or less in width, there shall be two dowels with one additional dowel for each additional 3 inches in width or fraction thereof. All joints shall be well cope fitted and all moulded edges smoothly machined.

(3) Interior Flush Veneer Doors

(3a) At the option of the manufacturer, the core shall be constructed of vertical blocks not over 2 inches wide on the face, well glued together with joints staggered and surrounded with ¾ inch hardwood edge strip on all four edges; or shall be constructed of stile, rail and panel units, each unit made up entirely of blocks with ¾ inch edge strips on the exposed edges of stiles and rails.

(3b) In lieu of ¾ inch hardwood top and bottom edge strips, the tops and bottoms of the doors shall be given two coats of paint or varnish before leaving the factory.

(3c) Horizontal crossbanding shall be 1/16 inch thick or thicker before sanding. Face veneers shall be (1/16) (⅛) inch thick before sanding *(specify wood)*.

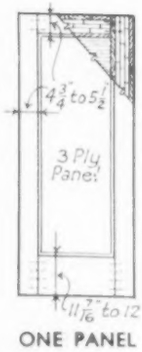
(4) Exterior Doors

Exterior *(stile and rail) (flush veneer)* doors shall be made in accordance with specifications for interior doors except that all glue, throughout, shall be water resisting casein glue and *(stile and rail)* face veneers shall be ¼ inch thick, before sanding.

SHORT FORM

All stock *(stile and rail) (flush veneer)* doors shall be made of sizes and design as called for on plans *(and details)* in accordance with the standard specifications of the National Door Manufacturers Association, Inc.

CONSTRUCTION DETAILS OF VENEERED DOORS



ONE PANEL

INTERIOR DOORS

VENEERED CONSTRUCTION

ONE PANEL VENEERED DESIGN

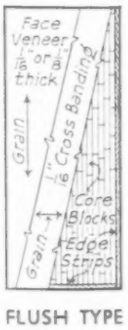
Manufactured in any hardwood with veneered flat panels, Moulded C&B, B&C, or Ovolo Sticking. Face veneers on stiles and rails ⅛" thick before sanding. Core blocks not to exceed 2" in width. Standard thickness of doors 1-5/16" or 1-11/16". Similar construction used for veneered two panel and six panel doors.

STANDARD SIZES FOR VENEERED AND FLUSH TYPE DOORS

2'-4"x6'-8"	2'-6"x6'-6"	2'-8"x6'-8"	3'-0"x6'-8"
2'-4"x7'-0"	2'-6"x6'-8"	2'-8"x7'-0"	3'-0"x7'-0"
	2'-6"x7'-0"		

FLUSH TYPE DESIGN

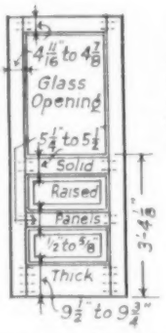
Manufactured with softwood built-up core, horizontal crossbanding 1/16" thick, with face veneer and edge strips of any hardwood. Face veneers ⅛" thick before sanding. Standard thickness of doors 1-5/16" or 1-11/16". Permissible to use face veneer 1/16" thick, also ¼" crossbanding. Optional with manufacturer to furnish core made as shown or made up of core block stile, rail and panel units doweled together to make a flush core.



FLUSH TYPE

Construction Details Pine Stock Doors

as Standardized by the National Door Manufacturers Ass'n., Inc.



TWO PANEL AND ONE LIGHT

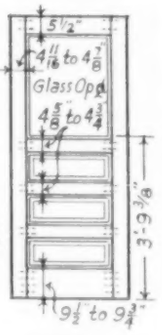
EXTERIOR DOORS

Manufactured in Ponderosa Pine with pine panels as shown on elevations. Moulded B&C, C&B or Ovolo sticking. Standard thickness of doors 1-5/16" or 1-11/16".

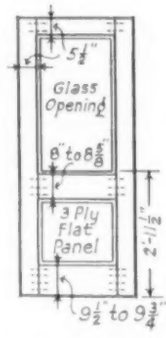
Solid Panels 1/2" to 5/8" Thick

STANDARD SIZES

2'6"x6'6"	2'10"x6'10"
2'8"x6'8"	2' 8"x7' 0"
3'0"x6'8"	3' 0"x7' 0"



THREE PANEL AND ONE LIGHT



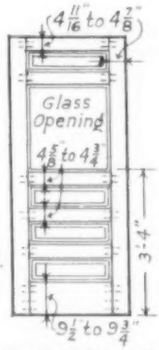
ONE PANEL AND ONE LIGHT

GLASS DIVISIONS

All glass openings in exterior doors can be divided into smaller lights as desired. Usual divisions are:

3 lights wide
4 lights (2 wide — 2 high)
6 lights (3 wide — 2 high)
9 lights (3 wide — 3 high)

Solid Panels 1/2" to 5/8" Thick



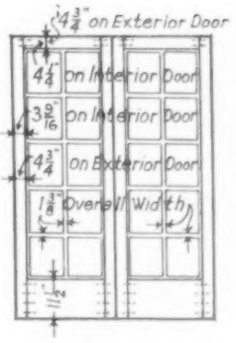
FOUR PANEL AND ONE LIGHT

CASEMENT DOORS

TEN OR FIFTEEN LIGHT CASEMENT DESIGN

Manufactured in Ponderosa Pine with glass as desired. Moulded B&C, C&B, O.G., or Ovolo sticking. Standard thickness of doors 1-5/16" and 1-11/16".

Interior Casement Doors are also made in any hardwood with veneered stiles and rails and solid division bars.



TEN LIGHT DESIGN

STANDARD SIZES

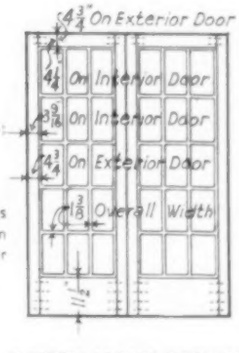
4'-0" opening, 2'-0"x6'-8" or 2'-0"x7'-0"
4'-8" opening, 2'-4"x6'-8" or 2'-4"x7'-0"
5'-0" opening, 2'-6"x6'-8" or 2'-6"x7'-0"
5'-0" opening, 2'-8"x6'-8" or 2'-8"x7'-0"

CASEMENT DESIGNS

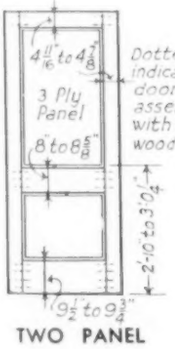
Casement doors can also be divided into:

8 lights (2 wide—4 high) and
12 lights (3 wide—4 high).

Pairs of casement doors in openings less than 5'-0" wide have 3-9/16" stiles as shown while pairs in openings 5'-0" wide and wider have 4¼" stiles.



FIFTEEN LIGHT DESIGN



TWO PANEL

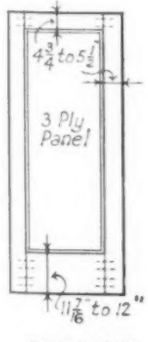
INTERIOR DOORS

Dotted lines indicate that doors are assembled with 1/2" x 5" wood dowels

Lock rail heights, width of stiles, and width of rails as noted on all elevations are minimum and maximum dimensions as used by the various manufacturers.

STANDARD SIZES OF ONE, TWO, AND SIX PANEL DOORS

2'- 0"x6'- 0", 1 3/8"	2'-10"x6'-10", 1 3/8"
2'- 0"x6'- 6", 1 3/8"	3'- 0"x6'- 8", 1 3/8"
2'- 0"x6'- 8", 1 3/8"	3'- 0"x7'- 0", 1 3/8"
2'- 0"x7'- 0", 1 3/8"	2'- 6"x6'- 6", 1 3/4"
2'- 4"x6'- 6", 1 3/8"	2'- 6"x6'- 8", 1 3/4"
2'- 4"x6'- 8", 1 3/8"	2'- 6"x7'- 0", 1 3/4"
2'- 6"x6'- 6", 1 3/8"	2'- 8"x6'- 8", 1 3/4"
2'- 6"x6'- 8", 1 3/8"	2'- 8"x7'- 0", 1 3/4"
2'- 6"x7'- 0", 1 3/8"	2'-10"x6'-10", 1 3/4"
2'- 8"x6'- 8", 1 3/8"	3'- 0"x6'- 8", 1 3/4"
2'- 8"x7'- 0", 1 3/8"	3'- 0"x7'- 0", 1 3/4"



ONE PANEL

ONE AND TWO PANEL DESIGNS

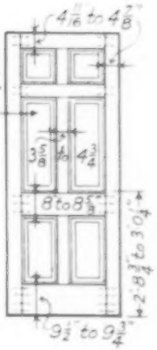
Manufactured in Ponderosa Pine with laminated flat panels of pine, fir, gum, or birch. Moulded C&B, B&C or Ovolo Sticking. Standard thickness of doors 1-5/16" or 1-11/16". Made also in any Hardwood with veneered stiles, rails and panels.

INTERIOR DOORS

SIX PANEL DESIGN

Manufactured in Ponderosa Pine with raised panels of solid pine. Moulded B&C, C&B, or Ovolo Sticking. Panels 1/2" thick. Standard thickness of doors 1-1/16", 1-5/16", or 1-11/16". Made also in any Hardwood with veneered stiles and rails, and flat veneered panels.

Solid Panels 1/2" to 5/8" Thick



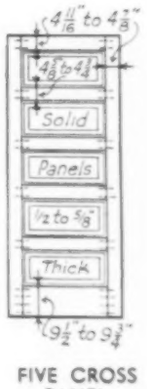
SIX PANEL

FIVE CROSS PANEL DESIGN

Manufactured in Ponderosa Pine with raised panels of solid pine. Moulded OG, C&B, or Ovolo Sticking. Standard thickness of doors 1-1/16", 1-5/16", or 1-11/16". Panels 1/2" thick.

STANDARD SIZES OF FIVE PANEL DESIGN

2'- 0"x6'- 0", 1 1/8"	2'- 6"x7'- 0", 1 3/8"
2'- 0"x6'- 8", 1 1/8"	2'- 8"x6'- 8", 1 3/8"
2'- 4"x6'- 8", 1 1/8"	2'- 8"x7'- 0", 1 3/8"
2'- 6"x6'- 6", 1 1/8"	2'-10"x6'-10", 1 3/8"
2'- 6"x6'- 8", 1 1/8"	3'- 0"x6'- 8", 1 3/8"
2'- 8"x6'- 8", 1 1/8"	3'- 0"x7'- 0", 1 3/8"
2'- 0"x6'- 0", 1 3/8"	2'- 6"x6'- 6", 1 3/4"
2'- 0"x6'- 6", 1 3/8"	2'- 6"x6'- 8", 1 3/4"
2'- 0"x6'- 8", 1 3/8"	2'- 6"x7'- 0", 1 3/4"
2'- 0"x7'- 0", 1 3/8"	2'- 8"x6'- 8", 1 3/4"
2'- 4"x6'- 6", 1 3/8"	2'- 8"x7'- 0", 1 3/4"
2'- 4"x6'- 8", 1 3/8"	2'-10"x6'-10", 1 3/4"
2'- 6"x6'- 6", 1 3/8"	3'- 0"x6'- 8", 1 3/4"
2'- 6"x6'- 8", 1 3/8"	3'- 0"x7'- 0", 1 3/4"



FIVE CROSS PANEL

Grading Rules for Pine Doors and Frames

Helpful Standards Established by the National Door Manufacturers Association

THE purpose of grades is to maintain a standard or measure of value among factories manufacturing similar products which will permit the buyer to obtain products of approximately the same utility regardless of the factory from which they are shipped.

Pine Frames

GRADE "A"—Material in Grade "A" Frames shall be practically free from defects in all exposed parts. Light brown water stain, and light red kiln burn are not considered defects. Parts that are not exposed when Frame is in place may contain stain, pitch streaks, sound knots, or any other sound defects that will not affect the strength of the Frame.

Workmanship must be good.

Pine House Doors

No. 1 QUALITY—Material in No. 1 doors shall be practically free from defects. Light brown water stain, and light red kiln burn are not considered defects. Also one (1) carefully repaired pitch seam not over 2½ inches in length is permissible in each stile or bottom rail.

Workmanship must be good.

LAMINATED PANEL DOORS—Panels shall have two good faces practically free from defects and may contain not to exceed 25% pieced faces. Inconspicuous patches shall be admitted.

No. 2 QUALITY—Material in No. 2 doors may contain light blue stain, medium brown water stain, or medium red kiln burn showing on not to exceed 50% of the area of any piece. Also pitch streaks, checks, pitch pockets, if carefully slivered, tight sound knots not to exceed ⅝ inch in diameter, and other defects, not one of which shall be more serious in nature than the defects already enumerated. Each stile must contain one (1) such defect, but no piece shall contain more than two (2), and no door shall contain more than eight (8) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain slight stains and discolorations. Any amount of unmatched pieced faces permissible. Inconspicuous patches shall be admitted.

No. 3 QUALITY—Material for No. 3 doors may contain all blue stain, brown water stain, or red kiln burn; also worm holes, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 1½ inches in diameter, and other defects, not one of which shall be more serious in nature than defects already enumerated. Each stile must contain two (2) such defects, but no piece shall contain more than four (4) and no door shall contain more than twenty (20) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain medium to heavy stains and discolorations, also pin knots, and other equivalent defects. Any amount of unmatched pieced faces and any number of patches permissible.

Pine Garage Doors

Pine Garage Doors shall be graded according to Pine House Door rules as shown above except mill-run grade which may contain blue stain, brown water stain, or red kiln burn, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 2 inches in diameter and other defects, none of which shall be more serious in nature than defects already enumerated.

VENEERED DOOR GUARANTEE

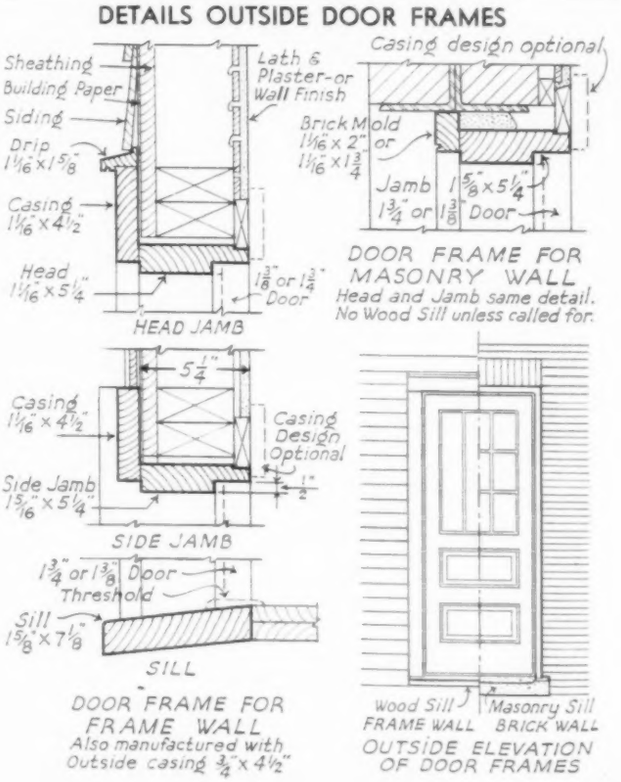
Veneered doors produced by members of the National Door Manufacturers Ass'n, Inc., are guaranteed by the manufacturer to be of good material and workmanship, free from defects which render them unserviceable or unfit for the use for which they are intended. (A warp or twist of not to exceed ¼ inch shall not be considered a defect). Natural variations in the color or texture of the wood are not to be considered as defects.

Veneered doors must be accorded reasonable treatment by the purchaser and must not be stored in damp warehouses or placed in moist or freshly plastered buildings, or subjected to abnormal heat or dryness, as manufacturer will not assume responsibility for defects resulting from these causes. Top and bottom edges of all doors must be thoroughly painted or varnished to prevent absorption of moisture.

Doors must be inspected upon arrival and all claims or complaints must be filed before painter's finish is applied.

The manufacturer agrees to repair or replace in the white, without charge, any door found to be defective within the meaning of this guarantee.

DETAILS OUTSIDE DOOR FRAMES



SEE HOW *it's built*

CROSS SECTION OF THE HUTTIG OF MUSCATINE *STOCK* "DUPLEX" *DOOR*

3 Ply Panel one-piece Face Veneers.

Metal spline insuring Permanent mitre joints.

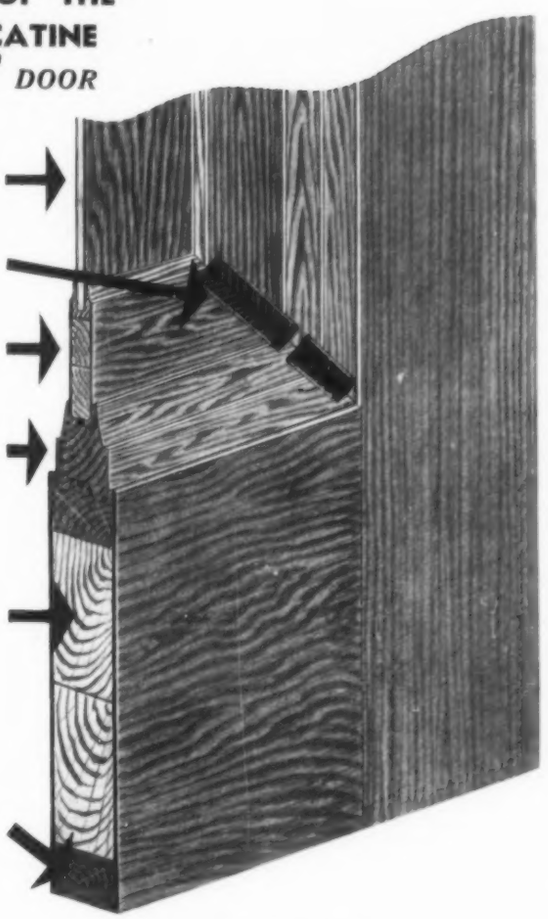
Insert frame genuine Waterproof glue construction.

Solid insert mould.

Kiln Dried W. P. P. core.

Hardwood edge strip on Hardwood Doors.

1/8 in. Veneers.



HUTTIG OF MUSCATINE

Stock "DUPLEX" *Door*

WE ALSO MANUFACTURE THE FAMOUS

RED-E-FIT ROT-PROOF WINDOW TRADE MARK

GUARANTEED FOR 25 YEARS AGAINST ROT AND DECAY

Comes ready to install
Fits any standard frame

SAVES 25c TO 50c A WINDOW

Is ploughed and bored for weights and cord — Has dovetailed putty lock — Is ready fit for any standard frame — Is chemically treated to prevent rot — Is better than the old style, and costs less installed. Look for the Trade Mark Brand on the edge of each sash.

Ask your dealer or write us for free descriptive literature

DUPLEX DOOR FACTS FOR YOU

The Huttig "Duplex" is unsurpassed for beauty and construction. There are no loose moulds —not a single nail hole—one-piece panel face veneers—These construction features are the unseen value that mean so much to the life of a door. Huttig "Duplex" doors, made with Genuine Waterproof Glue, are moisture proof. They will withstand careless exposure in freshly plastered rooms, and frequent temperature changes in bathrooms and kitchens. Their durability and rugged construction assure years of service under conditions where it would be dangerous to use an ordinary door . . . Note the details of construction as indicated by the arrows.

The lasting beauty of the Huttig "Duplex" is guaranteed. These doors are adaptable to any interior decorative scheme —Ask your Lumber Dealer to show you this distinctive, yet inexpensive, door.

HUTTIG MFG. CO., Muscatine, Iowa

BOOKS on BUILDING

A REVIEW of current publications in the building field. For information about these books, write American Builder, Book Service Dept., 30 Church Street, New York City or the publishers.

HOW TO ESTIMATE FOR THE BUILDING TRADES—by Gilbert Townsend, J. Ralph Dalzell, and James McKinney. 1939. 629 pages, 310 illus., 44 tables, 5 1/2 x 8 1/2, cloth. American Technical Society, Chicago, $4.75.

A complete and practical book on the estimating of materials and labor for every phase of the building trades as related to residences and moderate sized buildings. It shows how to estimate material and labor costs for excavations, masonry, carpentry, electricity, sheet metal, lath and plaster, marble and tile, painting, hardware, linoleum, heating and air conditioning, plumbing, glass, and curtains and shades. Included are over 500 questions and answers, as well as a set of 8 full sized blueprints which are complete in all details and drawn to standard scale.

ROOFING; ESTIMATING—APPLYING—REPAIRING—by James McCawley. 1938. 387 pages, illus., 5 1/2 x 8 3/4, cloth. Published by James McCawley, 175 Fifth Ave., New York, N. Y.

A practical handbook describing the mechanics of shelter; the application of roof coverings of asbestos, asphalt, coal tar, metal, slate, tile and thatch, prepared for the roofing and sheet metal trades, and as a guide for the architect and builder. Chapter headings are as follows: Historical Sketch; Built-up Roofing; Steep Roofing; Metal Roofing; Flashings; Repairing, Reroofing and Residing; The Expense of Doing Business; and Estimating.

AIR CONDITIONING—FURNACES AND UNIT HEATERS—by J. Ralph Dalzell. 1938. 430 pages, 187 illus., 100 tables, 6x8 1/2, cloth. American Technical Society, Chicago. $3.00.

This new book tells: How to air condition old houses; how to convert old heating systems into air conditioning systems; how to air condition new houses; how to figure summer and winter air conditioning; how to figure heat losses for houses during winter; how to figure heat gains for houses during summer. How to select air conditioning apparatus; how to figure duct sizes for hot air and cold air; how to figure furnace pipe sizes; how to figure register and grille sizes and locations; how to select and use air washers and how they function; how to select cooling and heating coils and how they function. How to dehumidify in summer; how to humidify in winter; how to design automatic control systems and how they function. How to figure necessary temperature of incoming air for summer cooling; how to figure necessary temperature of incoming air for winter heating. How to figure unit heater jobs; how to figure electric heating jobs. How to do the complete job for heating and air conditioning houses.

Typical house plans are included for every stage of the work and problems are presented and solved. Each section has many questions and answers, examples and solutions for the benefit of the reader. The book contains over one hundred tables covering every phase of air conditioning work.

WHAT THE HOUSING ACT CAN DO FOR YOUR CITY. 1938. 88 pages, illus., charts, diagrams, 5 3/4 x 9, United States Housing Authority. Superintendent of Documents, Washington, D. C., 20 cents.

This pamphlet, based on the first year of federal and local co-operation in the low-rent housing and slum-clearance program, contains much factual material on the rapid development of that program. The five chapter headings are: Why did Congress Create the USHA?; What Is the USHA Plan?; Does Your City Need Public Housing?; Public Housing Achieves Low Cost and Low Rents; Public Housing Is Good Business.

News of the Month

Building Activities and Meetings

Volume of Construction Makes Strong Start in 1939; Residential Building for First Six Weeks 111 Per Cent Ahead of 1938 Period

THE strong upturn in building activity which got under way during the spring of 1938 has shown continued expansion since the opening of the new year. Contracts for private construction projects awarded in the 37 eastern states during January recorded a 39 per cent gain over January of last year, according to F. W. Dodge Corporation. The January 1939 figure for private work amounted to $103,757,000 as compared with $74,630,000 for January 1938. During December, privately-owned construction totaled $110,036,000.

The Dodge Corporation stated, "In the past, the building industry moved forward as private construction advanced. As early as February 1938, advance indications of increased private residential work began to appear. By May, privately owned small house construction ran ahead of the preceding year. This upward trend continued to the end of 1938 and has expanded still further during January 1939."

With reference to publicly-owned construction, January contracts in the 37 states amounted to $147,916,000 as compared with $117,601,000 for January a year ago, representing a gain of 26 per cent.

The combined January total for both public and private construction contracts amounted to $251,673,000, a 30 per cent increase over January 1938; this was the largest opening month's total for any year since 1930. January residential volume was $80,163,000.

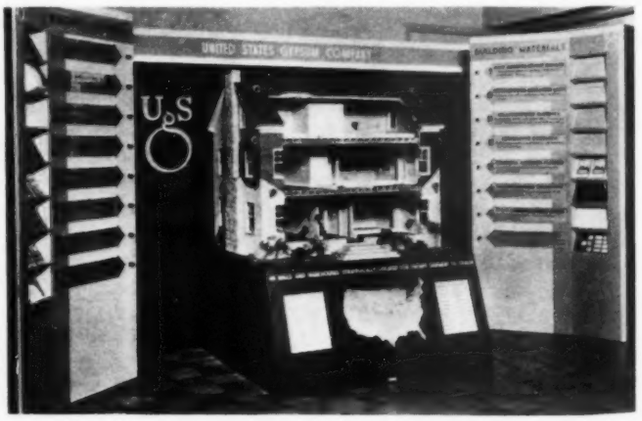
Figures for the first half of February, 1939, are as follows:

37 Eastern States	Feb. 1-15, '39	Feb. 1-15, '38	February, '38
Residential	$40,160,000	$21,131,000	$40,023,000
Non-Residential	31,320,000	26,167,000	48,440,000
Public Works	25,447,000	15,848,000	25,333,000
Utilities	10,672,000	2,924,000	5,149,000
Total	$107,599,000	$66,070,000	$118,945,000

Another Pottsco Plant in Operation

THE Celotex Corporation has announced that a new plant for the manufacture of Pottsco light-weight aggregate has been placed in operation at Pittsburgh, Pa. This is the fourth plant for the manufacture of this expanded blast-furnace slag which is sold by the Pottsco Division of The Celotex Corporation.

* * *



A NEW version of "Full-Line Selling" is graphically exemplified in the animated spectacular display of the United States Gypsum Company shown at conventions and at selected points of public traffic throughout the country. Central point of interest in the display is a model house, built to an accurate scale and measuring 4 feet 3 inches high by 5 feet wide and 3 feet 6 inches deep, which features actual USG materials in miniature size.

A "Master Sheet" for TruCost

(Continued from page 70)

chimney omitted the addition will equal the fireplace cost minus the chimney cost.

Porches. Although a porch is not shown, if a porch 8x14 is wanted, the units would consist of 1.1 squares of floor and ceiling, 30 linear feet of perimeter gives the trench wall and porch beam and, adding for the overhang and extra for gables, the linear feet of cornice. The porch roof would equal the floor area of 112 square feet, plus the perimeter (beam) of 30 multiplied by the cornice projection, plus the proper roof percentage. The perimeter of the porch is also basic for listing porch and balcony rails and are quickly figured at a unit price per linear foot. Steps are usually a part of the sidewalk contract so are listed therewith.

Gutters and Downspouts. These must be figured separately in accordance with the roof and gables, but the perimenter gives the linear feet of gutters for hip-roof houses.

Although these blank *TruCost* forms are available, the best form that anyone can use is his own. The cost of mimeographing is very low if one has too many changes to make in this stock form. Everyone I consulted wanted this or that changed and I advised all to try some form for a while and let experience dictate changes. Even then the ink won't be dry on one's own specially printed form before he will see changes he will make on the next lot printed. There's no such thing as perfection but certain basic requirements will always prevail, just like today's automobiles have four wheels, and the front ones turn, as the first "gas-wagons" did.

Some use this stock form but use the space for computing areas for listing labor costs in a separate column for each unit of construction. If this is done the areas should be computed on a separate sheet of paper and attached to this form so one can check back in case actual costs vary too much.

"HoltRates"

The "2339.10" shown at (I) is not ordinarily listed but is done in this case to show how one's price of the Basic House is determined. For this reason the extensions for foundations, cabinet-work and other variable features are not made. Anyone will readily understand it is merely a matter of listing his costs in the last column to get the total price on a job. Occasionally I am asked why a line is not provided on this form for O&P (overhead and profit), so I will explain that this important item should always be included in the *unit price of each unit of construction* so as to be sure it is not omitted, and, also, so that this *TruCost* estimate can be shown to anyone without divulging the percentage one adds.

By applying one's own local unit costs to the units extended in the last column of this specimen form and extending as is done to derive $2,339.10 in this case, it is possible to have a very reliable price for any *American Builder* designed by simply multiplying by the "HoltRate" given as the sixth item on all *TruCost* tables, such as on page 67 of this issue. Note that this item reads, "HoltRate on the following items," which means that porches are included, if shown by the plan, and that everything below the first floor joists must be added as well as the variable features of built-in cabinets, plumbing, heating, lighting fireplaces and other variables listed in the footnote below each *TruCost* Unit Survey table.

Many have told me that they just can't "savvy" these "HoltRates"—that this is as mysterious as picking rabbits out of hats, etc. Such remarks always remind me

(Continued to page 134)

A "Master Sheet" for TruCost

(Continued from page 132)

of the first time I tackled the multiplication tables in the way-back-when days. Those darn tables really were tough but I soon saw the light and then arithmetic was a most interesting subject. In like manner, "HoltRates" will prove most interesting and almost as reliable as 2 times 2 to those who really want to know modern estimating and will experiment a little this way:

Figure the cost of this Basic House by the same local unit costs that are used in figuring the squares of walls, floors, roof, etc., of any *American Builder* design. Remember, this includes only the items listed below the "HoltRate for following items." Multiply the cost of this Basic House by the "HoltRate" given for that other house and see how close they check.

"What's complicated about that?

Serves As Quick Check

"Yes," you say, "but what's the use when I have to figure in units anyway?", to which I reply most emphatically: First, to double-check yourself for possible errors in your calculations, such as misplaced decimals, and, in the second place, so you can quickly and easily make up a pricelist of all *American Builder* designs each month by simply figuring the foundation for each house and then adding the "HoltRate" multiplied by your own price of this Basic House and complete by adding the allowances made for the variable features. "HoltRates" will serve every purpose for a dependable preliminary price by ONE multiplication when it may be necessary to multiply TWENTY SEVEN times to get the same units of the house into your total price. If you value your time and want to be prepared to sell homes as folks want to buy them, let Holt's "HoltRates" Help YOU.

This is March. There's no time to be lost in getting organized to make 1939 a good SELLING year to and for everyone who should have a home of his own. Soon the building season will be in full swing everywhere, so next month I will explain how *TruCost* Labor Cost Record-keeping will remove another thorn out of the side of all-too-many builders of homes and promote the so-much-needed stability in the most important phase of the building business—estimating—the thing that makes or breaks builders. *TruCost* WILL help YOU if YOU will do YOUR part.

* * *

Power Equipment Speeds Garden Home Project

(Continued from page 76)

tion. The individual apartment units were laid out by Architect Iser so that each has its own private front entrance and stairs, which are maintained by the occupant. Each also has its own back porch and stairs. The oil burning heating system is entirely automatic. Thus, no inside maintenance workers are required in the Lindcrest houses. Steel windows with metal trim are installed, as well as steel door bucks. The only other interior trim is a simple baseboard.

Both Hall and Iser feel that they are making a worth-while contribution to better housing in projects of this type. They believe that for people who cannot afford individual homes of their own they are providing a healthful and attractive place to live in surroundings far better than the average American has been able to get at such rentals. Despite the fact that top union scales are paid ($12 a day for skilled workers), they have been able to get the costs down within reach of many

(Continued to page 136)

Power Equipment Speeds Garden Home Project

(Continued from page 134)

people who formerly could not afford this type of living. They believe that as their experience continues they will be able to produce still lower cost homes. To do so, however, lower wage scales based on more steady employment will be necessary.

Brief specifications include:
Footings—Monolithic concrete
Walls—Solid masonry
Windows—Fenestra steel casements and enclosures
Joists, Rafters and Studs—No. 1 grade marked Douglas Fir
Rolled Steel Door Bucks
White Pine Trim and Millwork
Built-in Hardwood Kitchen Cabinets
Select Red Oak Floors
Built-in All Steel Medicine Cabinets
Schlage Hardware
Copper Flashing, Gutters and Downspouts
¼" to ⅜" Variegated Slate Roofs
Complete Copper Termite Protection
Heat: Forced flow hot water, Petrol Model W-A oil burner, Weatherstat control, cast iron standing radiation
Standard Sanitary Fixtures
Kelvinator Refrigerators
Monarch Gas Ranges
Lightolier Electric Fixtures
Holliston Window Shades
Copper Hinged Type Screens

Sponsors: Linden Housing Corporation
Gene W. Hall, President
John W. Cross, Vice President
Ivan R. Lashins, Secretary-Treasurer
H. R. Alperin, Assistant Secretary

Builders: Parklap National Builders, Inc.
Gene W. Hall, President
C. Krulik, Vice President
J. Albert, Treasurer

* * *

Precut Framing Methods

(Continued from page 81)

to a minimum number, are:

STUD LENGTH—7'-9".

HEADER LENGTHS—One or more full stud spaces, as determined by width of opening.

DOOR SIZES—6'-8" high; 2'-0", 2'-6", 2'-8", 3'-0" widths.
—French doors 6'-8" high; 4'-0" and 5'-0" widths.

WINDOW SIZES—

1'-6" x 3'-0"	3'-0" x 4'-6"
2'-0" x 4'-0"	3'-6" x 4'-6"
2'-6" x 3'-0"	3'-6" x 5'-0"
2'-6" x 4'-0"	4'-0" x 4'-6"

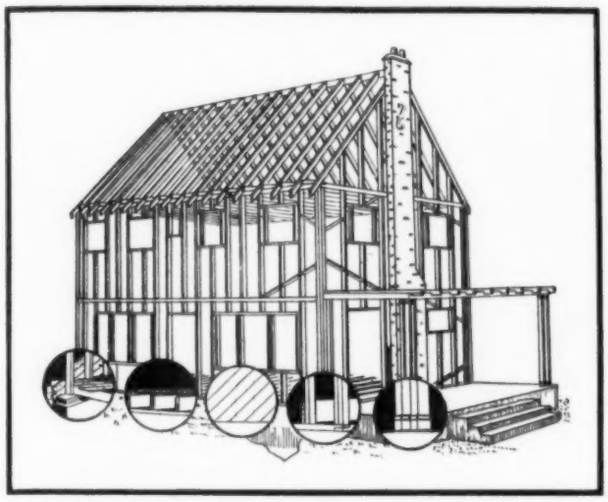
Notes:—Window headers frame to same height as door headers.
—Rough frames for double and triple windows any multiple of above widths.

DIAGONAL BRACING—Cut for run of 6 stud spaces between plates (approximately 45 degrees).

FIRE BLOCKING—Beveled for 2½" rise between studs.

SURFACED SIZES OF PRECUT FRAMING MEMBERS—
Studs, cripples, trimmers, bracing and blocking: 2" x 3¼".
Upper headers: Single 3¼" x 3¼" and 3¼" x 5¼" as determined by span; or pairs of 1¾" x 3¼" and 1¾" x 5¼".
Sill headers: 1¾" x 3¼".
Note:—These sizes were chosen because of prevalent use in Southern California. Precut Framing has full applicability to other surfaced sizes, including American Lumber Standards.
—Two members only—upper headers and sill headers—require accurate thicknesses or widths. S4S lumber is used to provide such fitting.
—Basic assumption is that windows are wood, double hung.

(Continued to page 138)



Protection at these points is the sign of a well built home. You can assure your client freedom from costly repairs by using properly Treated Lumber for doors, window frames, sills, joists, sheathing and sub-flooring.

You can build Profits too . . . By Building with

DU PONT

Chromated Zinc Chloride TREATED LUMBER

Lumber treated with du Pont Chromated Zinc Chloride lasts 3 to 5 times longer than untreated lumber. It gives your customers dependable protection against loss from decay and termites and protects the structure for the life of the investment. It is clean, odorless, fire-retarding, readily workable and paintable.

You and your customers get all these values in du Pont Chromated Zinc Chloride Treated Lumber.

More resistance to abrasion • Fire retardance
Non-corrosive to hardware • Termite repellence
Readily fabricated • Odorless • Paintable
Decay resistance • Clean • Economical

Protect your customers from future losses due to decayed or termite infested woodwork and you can build a profitable business.

Write today for all the facts about du Pont Chromated Zinc Chloride and how it can help you to build for permanence and profits.

E. I. du Pont de Nemours & Company, Inc.
DU PONT
Grasselli Chemicals Department
Wilmington - Delaware

Now build Every FIREPLACE this improved way

INSURES *Smokeless* **OPERATION**

Circulates Heat . . .

THE Heatilator offers every builder the most important improvement in fireplace construction and utility made during the last 100 years. It makes *every* fireplace a practical heating unit as well as a decorative feature—one that warms every corner of the room, and even adjoining rooms. A fireplace that actually *circulates heat!*

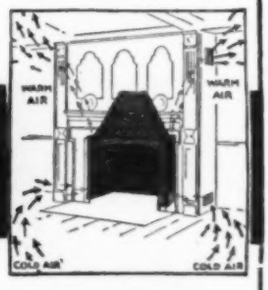
Easier to Build

The Heatilator is a double-walled steel heating chamber that is inclosed in the masonry, taking the place of the usual firebrick. It serves as a steel form for the masonry—around which any style mantel can be built—assuring correct design and smokeless operation. The firebox, damper, smoke dome and down-draft shelf are built in the unit, greatly simplifying construction.

Proved All Over America

The Heatilator Fireplace is a thoroughly proved, successful fireplace backed by years of use in thousands of homes and camps. Owners praise it highly. They say that it cuts heating costs both spring and fall . . . that it provides more satisfactory heating.

Sold by leading building and lumber dealers, with stocks in principal cities. MAIL THE COUPON for complete details and installation data.



HEATILATOR Fireplace

HEATILATOR COMPANY,
823 E. Brighton Ave., Syracuse, N. Y.

Without obligation, please send installation data and complete information about the Heatilator.

Name.....

Street.....

City..... *State*.....

Precut Framing Methods

(Continued from page 136)

equipped with spring type sash balances. For in- and outswinging casements and other types of hardware, Precut Framing is readily adaptable.

Formulas

By use of the following formulas, the length of any member in any wall can be readily computed. Each formula is accompanied by a numerical example showing determination of an actual member as given in the chart of standards. For simplicity, the following nomenclature is used. Standard sizes are shown in parentheses. These symbols are applied to both length and depth.

B = Cut-in diagonal brace (2x4, S1E¼″ off)
LC = Lower cripple (do)
UC = Upper cripple (do)
F = Fire block (do)
H = Upper header (2 pcs. 2x4, 2x6, etc., S1S1E¼″ off—or 1 pc. 4x4, 4x6, etc., S4S¼″ off)
SH = Sill header (2x4, S4S ¼″ off)
S = Stud (2x4, S1E ¼″ off)
DT = Door trimmer (2x4, S1S ¼″ off)
WT = Window trimmer (2x4, S1E ¼″ off)
W = Finish width or height of window or door.

Note: The foregoing sizes are for a 2x4 stud wall. For 2x6, change sizes accordingly.

S. Key vertical dimension is the stud length. S = 7′-9″, standard.

H. Key horizontal dimension is the header length. Size is determined by the span, as follows:

Nominal size	Supporting roof and ceiling only: Max. span	Supporting roof and ceiling only: Equiv. Stud spaces	Supporting 1 story only: Max. span	Supporting 1 story only: Equiv. Stud spaces
2 pcs. 2x4 or 1 pc. 4x4	4′-0″	(3)*	3′-0″	(2)
2 pcs. 2x6 or 1 pc. 4x6	6′-0″	(4)	5′-0″	(4)
2 pcs. 2x8 or 1 pc. 4x8	8′-0″	(6)	7′-0″	(5)
2 pcs. 2x10 or 1 pc. 4x10	10′-0″	(8)	9′-0″	(7)

*Figures in parentheses are appropriate maximum number of stud spaces.

H = W plus 2T plus fitting clearance plus side casings plus distance to next stud.

Example for 2′-6″ door: H = 2′-6″ plus 2 pcs. 2″ plus 2 spaces ¼″ plus 2 pcs. ¾″ = 3′-0″. Length for 3 stud spaces = 3′-10″. Therefore, H = 3′-10″. 2 pcs. 2x4 or 1 pc. 4x4 will be required.

SH = H.

DT = W plus flooring thickness pius rug clearance plus head casing plus fitting clearance minus thickness of sole plate.

Example for 6′-8″ door: DT = 6′-8″ plus ½″ plus ½″ plus ¾″ plus ¼″ minus 1¾″ = 6′-8¼″.

UC = S minus T minus H.

Example for 6′-8″ door: UC = 7′-9″ minus 6′-8¼″ minus 3¾″ = 9″.

WT = W plus finish sill overall thickness plus head casing thickness plus fitting clearance.

Example: for 4′-0″ height window: WT = 4′-0″ plus 2½″ plus ¾″ plus ¼″ = 4′-3½″.

LC = DT minus WT minus SH.

Examples for 4′-0″ height window: LC = 6′-8¼″ minus 4′-3½″ minus 1¾″ = 2′-3″.

F = Distance between studs @ 16″ c.-c., plus increase for tilt of the fire block. See sketch on chart for dimensions of standard fire block.

B = Diagonal distance between studs along a line running from sole plate to top plate having a slope determined by the number of stud spaces occupied.

Check. A hasty check of formula computations will determine their accuracy. For a window, UC plus H plus WT plus SH plus LC = S.

Example for 4′-0″ height window: 9″ plus 3¾″ plus 4′-3½″ plus 1¾″ plus 2′-3″ = 7′-9″.

(A later article will describe shop procedure for precutting, estimating and listing, construction methods and cost savings achieved in precut framing.)

Mixing Concrete

(Continued from page 79)

from mixer into the forms without the excessive use of equipment or unhandy apparatus.

A concrete pump, originally developed in Germany and Holland, and introduced into this country in 1932, has gone a long way toward achieving this goal of a satisfactory continuous flow of concrete.

This method consists essentially of a single acting, single cylinder piston type pump operated in connection with very large inlet and discharge valves, controlling the flow of concrete through pipes directly into the forms. As a concrete placing method it has many distinct advantages, but in common with any method is not a sure cure for all jobs.

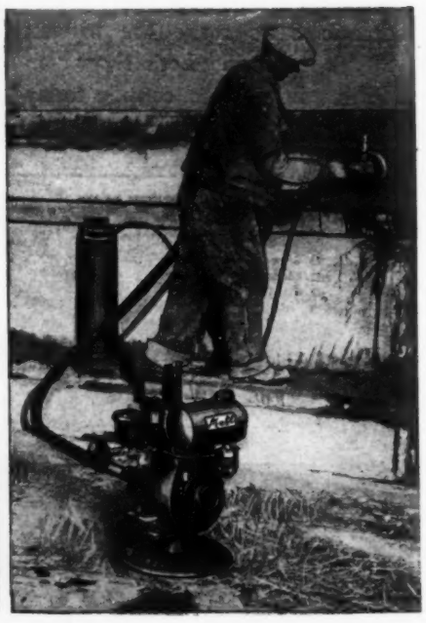
In summing up the recent years developments in concrete mixing and placing equipment, there has been a steady and very definite trend by all manufacturers to modify and improve equipment to meet the operating requirements of the contractors.

The newer developments have been along the lines of supplying labor-saving equipment in an effort to keep construction costs low in spite of rising labor rates and shorter hours.

Future profits in concrete construction appear to depend largely upon the ability of the contractors to develop their working organization and select equipment to meet today's working conditions.

Greater premium will be placed upon the *steady* employment of a fewer number of men rather than the use of large gangs for a few weeks a year and a skeleton crew during slack periods. Equipment or men that can be kept continuously employed at a normal load appear to give the most profitable returns.

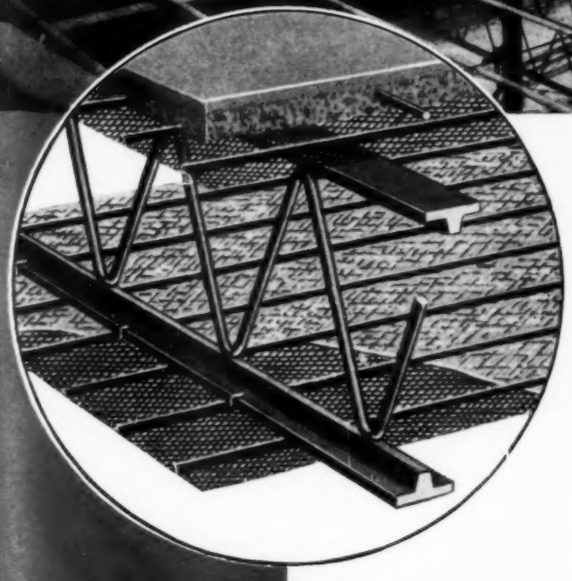
Equipment manufacturers as a whole are meeting the contractors' requirements with equipment built to fit these new economic conditions as well as new specifications.



ABOVE: Self-priming pump, either gasoline or electric motor driven, in one of its several sizes, is frequently a useful and necessary piece of equipment.

FOR surfacing, finishing, drilling and brushing concrete surfaces, a new light-weight gas engine unit offers speed and wide utility.

A PATTERN FOR PROFITS IN SOUND FLOOR CONSTRUCTION



Note how Truscon Open-Truss Steel Joists speed up construction and cut costs by saving time and material:

1. Accuracy of design and construction eliminates waste of materials and speeds up floor erection.
2. Any number of floors can be erected simultaneously. Working platforms are quickly provided for allied trades to *stay in action* without interference or delay.
3. Pipe and conduit can be run in any direction through the open webs of Truscon Steel Joists. Economical plumbing, heating and electrical layouts can be planned.

In addition to these and other time and material saving factors, Truscon Open-Truss Steel Joists provide light weight with great strength and rigidity; fire resistance; and protection against termites and other pests.

Write for Catalog which gives full details, including sizes, loading tables and related data.

TRUSCON STEEL COMPANY • YOUNGSTOWN, OHIO

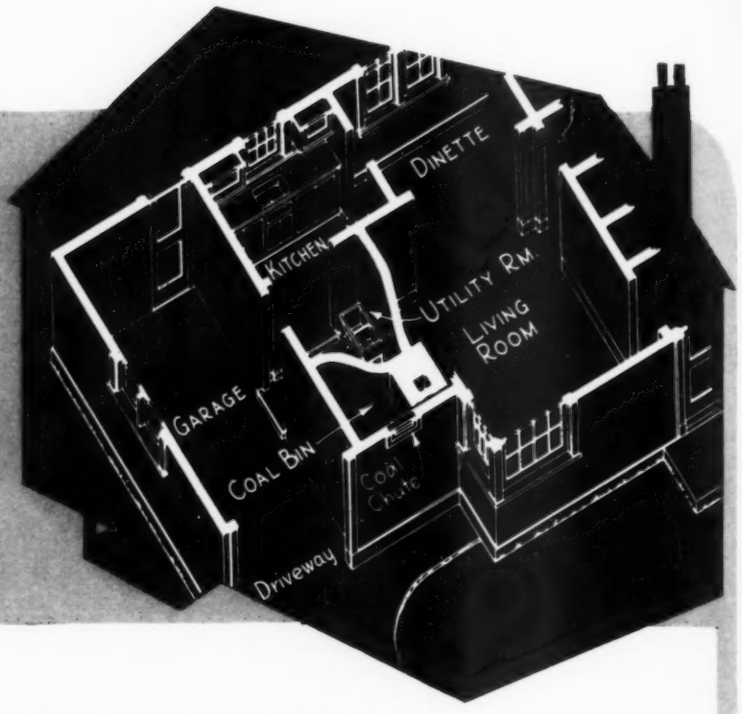
57 Sales-Engineering Offices

SUBSIDIARY: REPUBLIC STEEL CORPORATION

TRUSCON *Open Truss* STEEL JOISTS

HOW TO PLAN

FOR THE UNIVERSAL FUEL IN THE BASEMENTLESS HOUSE . . .



One important factor that should never be overlooked in planning economical basementless houses is *operating cost*. Most families who buy such houses must watch every penny. They must have low cost houses. They must have small payments on those houses. But all that they can save on fixed charges may quickly be eaten up by operating costs. In no way is this more likely than by expenditures for high-priced fuels, particularly in very cold weather.

The low cost, universal fuels, bituminous coal and coke, fill a very definite need in low cost homes. The extra expense of providing storage space for them is a small initial expenditure. The savings from lower fuel costs soon amortize the cost of the additional space. Then the owner enjoys low cost fuel indefinitely.

Planning basementless homes for the modern use of bituminous coal or coke follows the fundamental principle of planning homes for modern, economical heating. The 1939 Basement Plan Book contains several plans and isometric drawings of basementless homes designed for modern bituminous coal heating. A copy of this helpful book will be sent you on request.

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The Nation-Wide Organization of Bituminous Coal Producers

HEADQUARTERS: 804 SOUTHERN BLDG., WASHINGTON, D. C.
WESTERN OFFICE: 307 N. MICHIGAN AVENUE, CHICAGO, ILLINOIS

Please send me a copy of your Free Booklet "*The 1939 Basement Plan Book.*" A. I. A. File 30-G.

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Bituminous Coal—the "Universal Fuel"

FOR HOME HEATING • FIREPLACES • HOT WATER • INDUSTRY • INSTITUTIONS • BUILDINGS • POWER • TRANSPORTATION

THE MODERN FACING MATERIAL

K-Z-S ARCHITECTURAL PORCELAIN ENAMEL

For both exterior and interior use in store fronts and buildings of all types and sizes.

Great variety of appealing, modern colors — with 25 standard satin finish colors plus black and white in gloss finish.

A smooth, non-porous, easily cleaned surface with unusually tough, acid-resisting finish.

Sturdy panel construction of 16-gauge extra-flat enameling steel with strongly welded corners.

Safe, secure, individual suspension on Rustless Metal Spring Clips — individually removable.

● K. Z. S. panels offer the most modern and up-to-date development of porcelain enamel for architectural use—offer great freedom for the designer, ease of erection, economy of upkeep, and fresh, modern appearance.

Panels are fabricated from heavy, 16-gauge, extra-flat enameling steel, with strongly welded corners — porcelain enameled on both sides under tremendous heat (1550 degrees F.), thoroughly fusing steel and glass. Three coats of desired color are fired on face, producing a smooth, non-porous and unusually tough surface.

Choice of 27 standard colors, plus availability of special shapes and designs, makes this a most versatile material. Designed for use with ZOURI Rustless Metal Store Front Construction, Doors and Metal Work in the complete front.

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Zouri Store Fronts, Niles, Michigan
Send new booklet and data on K.Z.S. Architectural Porcelain Enamel.

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PROVIDES BUILDERS WITH VALUABLE AIDS

FOR THE SALE OF NEW HOMES, THROUGH 4-SQUARE LUMBER DEALERS

With new house construction heading upward, Weyerhaeuser has provided practical materials, which can be of great assistance to builders. It can help them to deliver greater building values, which in turn increases building volume and building profits.

Through 4-SQUARE Lumber Dealers, Weyerhaeuser offers to men engaged in building an array of material, which inspires, supplements and supports their work. This material is designed to help builders locate prospects—provide sound, practical ideas in home planning—educate the buyer to a knowledge of good construction—and thereby simplify the task of selling.

A great many new homes, noteworthy for excellent design, fine engineering and economical use of standard materials, have been built in the past through the inspiration of 4-SQUARE Demonstration Homes. Builders are benefiting directly from this material. This year, the benefits are still greater, for the 4-SQUARE selling aids have been expanded to enable everyone in the industry to render finer building services.

See your local 4-SQUARE dealer, and talk to him about the selling of new houses. He will put in your hands the new 4-SQUARE BOOK OF HOMES—illustrating *thirty-six* American houses, designed by nationally prominent architects in collaboration with authorities in small house engineering. Copies of this book are available for distribution to your prospects.

Folders advertising the BOOK OF HOMES are also available to help you develop new house prospects. Your 4-SQUARE Dealer has other sales aids which will help you to follow through to completed contracts—to enable you to deliver greater building values, and increase your building sales and profits.

To secure better built homes and realize full, fair profits, builders, architects and lumber dealers must work closely together. Weyerhaeuser invites you to use the help of an intelligent, aggressive partner, your 4-SQUARE lumber dealer!

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★ FIRST NATIONAL BANK BUILDING • SAINT PAUL • MINN.

SALES AIDS

A visit at the office of your local 4-Square Dealer will reveal to you a source of valuable sales materials which you can put to work—literature and services which contain practical and profitable ideas for promoting your business locally. Ask your local dealer about these selling helps.

IMPROVED PRODUCTS

In addition to the 4-Square Lumber features of smooth, square ends, cut to exact standard lengths, Weyerhaeuser engineers are continually searching for new and better uses for lumber. Short-cut Framing is one recent contribution...Endless lumber is another.

FARM SERVICE

If you rely on the farm for business, you can get a lot of help from the 4-Square Farm Building Service. Here are 122 model farm buildings, designed by 15 Agricultural Colleges. You will find many suggestions in this service, which will help you and help your farmer customers. See your 4-Square Dealer.

INSTALLMENT SELLING

It's easy to sell profitable remodeling jobs, with installment selling. Through A. B. C. Installment Note Purchase Plan you can arrange installments for your customers right in your 4-Square Dealer's Office. That relieves you of much detail.

CERTAIN-TEED *Announces*

...a complete line worthy of the slogan
QUALITY MADE *Certain*
SATISFACTION GUARAN-*teed*

Made by the NEW CERTAIN-TEED CANE-WEAVE PROCESS

Certain-teed's new and complete line of structural insulation—C-S-I—covers every need for sheathing, lath, wallboard and interior finish. And wherever it's used it *insulates and adds structural strength!*

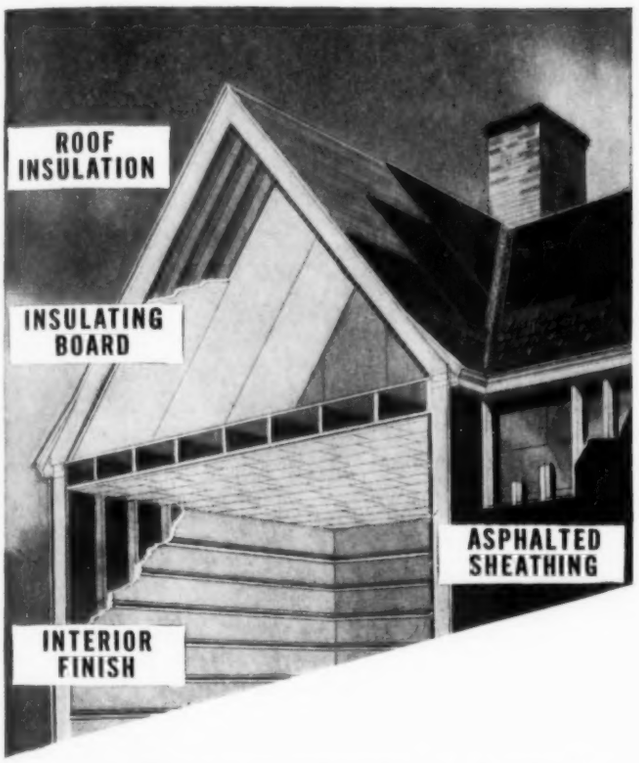
Every square inch of C-S-I Structural Insulation is a network of long, tough, strong cane fibers—thousands of them—interlocked, bracing each other like the framework of a bridge to provide greater strength and rigidity. Interwoven by the **Cane-Weave Process**, the fibers of C-S-I combine this high structural strength with an even greater insulating value. To the millions of insulating air cells in each fiber, interweaving adds still more dead-air space to block the passage of heat or cold. At the same time, the Cane-Weave Process adds life ... provides the structural strength to prevent C-S-I from settling or pulling away from the framework. These powerful advantages put extra sales appeal into the houses you build.

STILL ANOTHER EXTRA VALUE

Certain-teed Structural Insulation is licensed under Ferox Process patents. Under this process every square foot is dry-rot proofed and termite-proofed.

DAMP PROOF WITH C-S-I ASPHALTED SHEATHING

For structural strength plus moisture proofed insulation, replace wood sheathing and building paper with C-S-I Asphalted Sheathing. Over fibers



which are themselves waterproofed in manufacturing, asphalting provides an additional weather and moisture proofing which seals both the sides and edges of the board. A bright aluminum powder coats one side, providing further protection. Asphalted C-S-I Sheathing adds to the salability of the houses you build by providing a moisture and vapor resisting barrier *plus* added structural strength and insulation.

COLOR—TEXTURE—WORKABILITY

C-S-I Insulating Board, Plank and Tile for interior finish is available in three colors and three textures. The workability of all C-S-I boards and ease of application win the favor of craftsmen and make it look good on the time sheets, too.

NATIONALLY ADVERTISED TO YOUR PROSPECTS

The powerful advertising story of houses that are structurally stronger, insulated, damp-proofed and made smartly modern in interior treatment with C-S-I is reaching your prospects in influential national magazines and business publications.

THE C-S-I LINE MEETS EVERY INSULATION PROBLEM

Fills Every Insulation Board Requirement

C-S-I INSULATING BOARD—Used as sheathing, as interior finish in color and texture or as a base for painting or other decorative treatments. Available in 3 colors and 3 textures. Licensed under Ferox Process patents, every square foot is dry-rot proofed and termite-proofed.

C-S-I ASPHALTED SHEATHING—Used under brick veneer, siding, shingles or stucco; also as a roof sheathing on pitched roofs. Licensed under Ferox Process patents, every square foot is dry-rot proofed and termite-proofed.

C-S-I KEY-LAP LATH—Textured plastering surface insures a stronger plaster bond. Long edges shiplapped; all edges beveled to reinforce plaster against cracking. Licensed under Ferox Process patents, every square foot is dry-rot proofed and termite-proofed.

C-S-I ASPHALTED KEY-LAP LATH—Same as above but asphalted.

C-S-I ROOF INSULATION—Used on pitched roofs under certain types of roofing and under built-up roofing on flat roofs, also as a protection course for membrane waterproofing. Licensed under Ferox Process patents, every square foot is dry-rot proofed and termite-proofed.

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The qualities C-S-I add to a house are so definite, so evident, that there is immediate acceptance from prospects, when you say, "This house insulated throughout with C-S-I".

COMPLETE DETAILS, NO OBLIGATION

Let us send you samples of C-S-I Insulation. Also let us put your name on our list to receive our profusely illustrated 24-page Insulation Manual now being prepared. Use the coupon below.

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I'm building the house myself"

SOME pay more for lumber, some pay less. But we all know the amateur house builder gets an expensive education. The middlemen pay their way in the building field as elsewhere —the architect in planning, the contractor in speed and experience, the building supply dealer in wide stock and prompt service, the skilled workman in craftsmanship that lasts through the years. In fact most home financing is contingent upon good plans, reliable materials and capable supervision.

When the architect, the contractor or the master builder buys insurance from the experienced agent or broker of a stock insurance company he does not say "$50 worth of insurance please." He asks for and gets the advice and full services of an expert purchasing agent in the complex insurance field, like himself an expert middleman. No worries about uncovered risks that might wreck a business.

* * *

Because we believe so thoroughly in the services of an expert middleman whether architect, contractor, insurance agent or broker, we refuse to accept business direct because it is not in the interest of the Company or the assured to do so. When *you* buy National Surety Fidelity Bonds, Surety Bonds, Burglary or Forgery Insurance through your local insurance agent or broker, you deal with a customer and friend who is a fellow member and supporter of the American Business System.

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VINCENT CULLEN, President

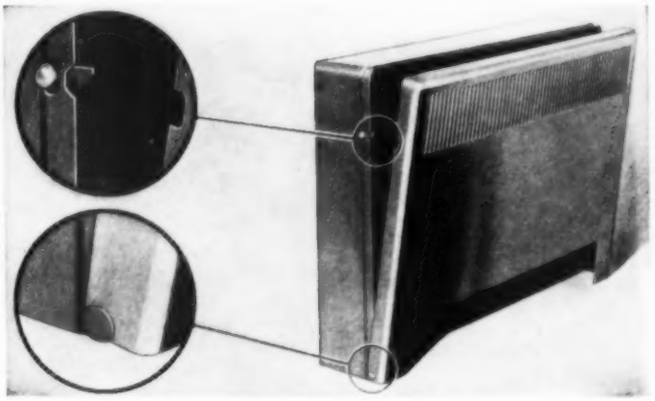
The Most MODERN Method of Heating

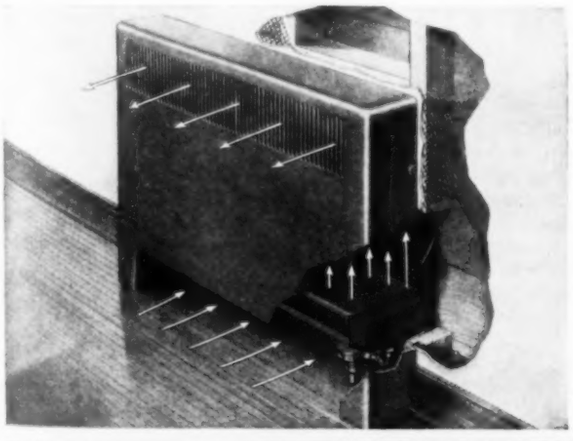
...and the Most BEAUTIFUL

MODINE Copper Convectors

NEW COMFORT, CONVENIENCE, CLEANLINESS AND BEAUTY—PLUS ALL OF THE SUPERIORITIES OF STEAM OR HOT WATER HEATING Everywhere today...in homes, apartments, offices and public buildings...the most modern method of heating is with Modine *Copper* Convectors. Replacing old-style, inefficient, ugly cast iron radiators, Modine Convectors bring new comfort, new convenience, new cleanliness . . . and *a new and distinctive beauty* of appearance that harmonizes with the appointments of even the finest rooms. And Modines take full advantage of the time-proven superiorities of steam or hot water heating.

SAVE FLOOR SPACE—SAVE WALL SPACE—SAVE FUEL—Small and compact, the Modine heating unit may be built into the wall. Made of enduring copper, it heats faster, responds more quickly and evenly to automatic control, and saves fuel.





ONLY MODINE HAS NEW MANUALLY REMOVABLE ENCLOSURE FRONT No screws, bolts, or nuts. No tools. Press two catches *by hand,* and enclosure front of new Modine Standard Convector is off. Saves 15 minutes per convector in installing; speeds up cleaning and servicing.

MORE RADIATION PER SQUARE FOOT OF WALL SPACE—With new Projection Front type, *Standard* Recessed Convector, a heating unit of 7⅜ or 9¼-in. depth may be installed in 4-in. stud walls.

ENCLOSURES PROMOTE GENTLE CIRCULATION OF CONVECTED HEAT—The cooler, heavier air enters through air inlet grille (or framed lower opening) . . . is heated by copper heating unit...rises...then circulates out into room through upper grille. No heat is wasted through rear or radiates through front to crack plaster or smudge walls.

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See the Modine Convectors at the 1939 New York World's Fair in House No. 8 "Town of Tomorrow"

Go MODERN with

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RESIDENTIAL, COMMERCIAL, INDUSTRIAL HEATING, COOLING AND AIR CONDITIONING EQUIPMENT

Sold Through

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AN ENTIRELY NEW CONCEPTION OF BEAUTY—MODINE DELUXE CONVECTORS—Never before, except possibly in custom designed and manufactured convectors, has there been any true beauty in heating equipment. Modine *DeLuxe* Convector Enclosures, graceful in line and pleasingly proportioned, with a wide selection of *die cast* grilles, allow builder or architect freedom to express beauty in keeping with the finest decorative motifs.

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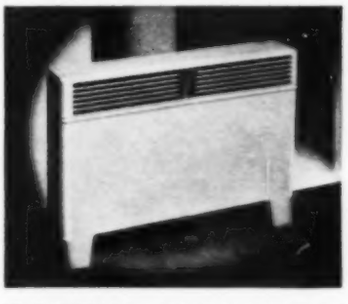

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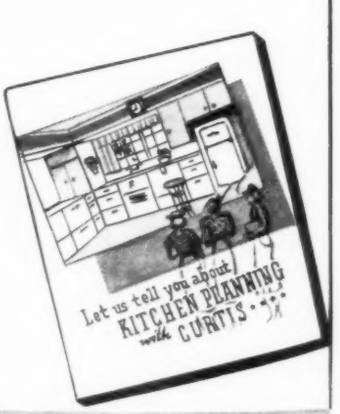
● Get into the kitchen business! Get in it right—plan the kitchens you talk about the Curtis way! Whether you figure new houses or work out remodeling plans, put your selling emphasis on the kitchen. That's where a woman's interest lies—that's where you can "clinch" the sale.

This new book, just published by Curtis, sums up many years of experience in helping over 50,000 "Mrs. Americas" plan their kitchens. If you want to "click" with most prospects, get this book now!

Curtis Kitchen Planning starts with spacious, durable and good looking *wood* cabinets. They have every modern feature; exciting new accessories. Packed in dustproof cartons, they are delivered to the job unpainted—ready to decorate. Here's a strong selling point—each housewife chooses her own color scheme, is allowed complete freedom in being individual.

That entire planning story is worked out in the new Curtis book. It's your chance to make kitchen planning easy and economical while giving your customer lasting satisfaction with Curtis quality—a quality with which no job-built units can compare.

See your Curtis Dealer now (there's one near you). Get this marvelous new kitchen-planning book. Or return the coupon for all the facts and a *free* copy.



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The economical answer to an *annual spring problem* in the home

Everywhere, at this time of year, people are beginning to worry about the spring and summer supply of hot water. When the time to close down the winter heating plant arrives, "What to do about hot water" is a real serious question.

It's no problem in the home with complete modern Anthracite equipment. The modern Anthracite water heater with regulator, provides a constant supply of hot water, 24 hours a day, in ample quantities for every purpose—at ⅓ to ½ the cost of gas or electricity.

Modern Anthracite tank heaters are equipped with regulators that keep the water always hot—never too hot. They regulate drafts, eliminating all hand regulation. They save steps—save running up and down the basement stairs to light, adjust, and turn the heat on and off.

All of this convenience, plus the luxury of a constant, ample supply of hot water, costs as little as ⅓ as much as the same service with any other fuel.

ANTHRACITE INDUSTRIES, Inc.
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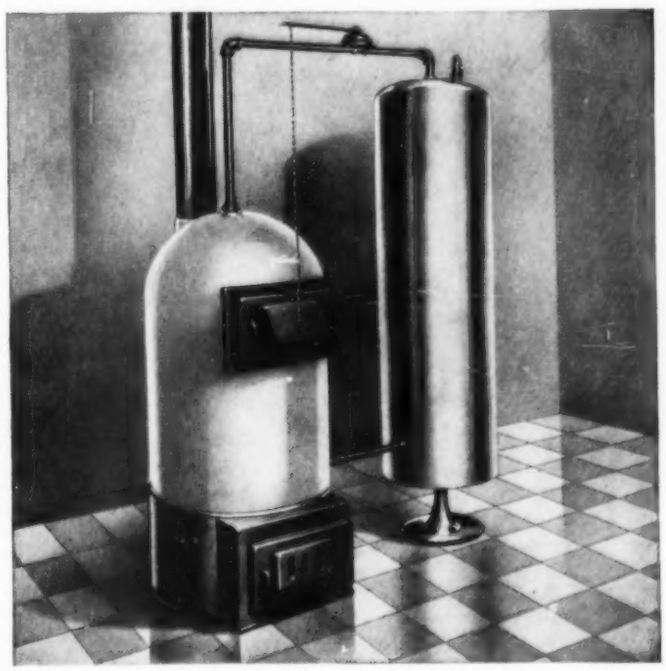


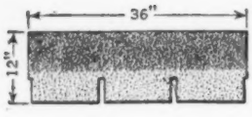
THE 7 ESSENTIALS OF COMPLETE HEATING SATISFACTION

★ *COMFORT* ★ *CLEANLINESS*
★ *CONVENIENCE* ★ *HEALTHFULNESS*
★ *SAFETY* ★ *DEPENDABILITY*
★ *ECONOMY*

Save with Pennsylvania ANTHRACITE
(HARD COAL)
THE ONLY 7 STAR FUEL

ANTHRACITE INDUSTRIES approved INCORPORATED

FLINTKOTE PRODUCTS *help sell houses*

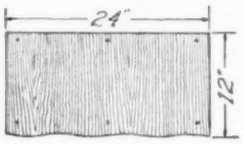


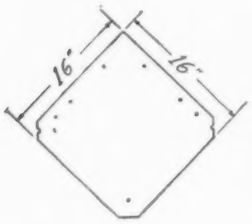
FLINTKOTE ASPHALT SHINGLES

Famous for their wide range of beautiful colors and blends...made by one of the oldest and largest manufacturers...styled right up-to-the-minute...fire-resistant Flintkote Asphalt Shingles *help sell houses.*

FLINTKOTE ASBESTOS SIDINGS

Flintkote Woodgrain Asbestos Sidings ...beautifully textured, fireproof and permanent...are ideally suited to both new construction and re-siding. All styles available in the Sealkote type, especially treated to resist moisture.

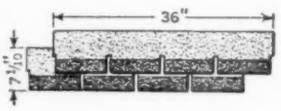




FLINTKOTE ASBESTOS SHINGLES

One out of every four residential fires, starts on a roof. Fireproof Flintkote Asbestos Shingles are excellent "fire insurance" for your clients. Available in Dutch Lap and Hexagonal styles in several colors.

FLINTKOTE ASPHALT SIDINGS



Transforming drab houses into handsome substantial looking "brick" homes with Flintkote Asphalt Sidings is profitable business for wide-awake contractors.

FLINTKOTE ROLL & BUILT-UP ROOFINGS

For every type of farm building...for all types of residential, commercial and industrial *flat-roof* work... Flintkote makes the *right* type of Roll Roofing...the right Built-up Roofing Materials.

FLINTKOTE ROCK WOOL

Today...the house built *without* adequate *insulation* is *obsolete* before it is completed! The complete line of Flintkote Rock Wool materials fits every new construction and remodeling insulation need.

FLINTKOTE BOARD PRODUCTS

The line of Flintkote Insulation and Hard Board Products contains versatile materials of a thousand uses in new construction and home improvement work too. Big, easily handled sheets cut labor costs.

FLINTKOTE ASPHALT PAINTS & PLASTICS

Headed by the famous Flintkote Static Roof Coating and Static Protective Coating, this line of waterproofing, dampproofing and maintenance materials solve many headaches for many contractors.

FLINTKOTE PRODUCTS *help sell houses* because they so obviously contribute permanence...protection... beauty...comfort...and economy...to the houses they guard. Flintkote Products *help sell houses* because you can have complete confidence in their dependability, long life and satisfactory service.

From the Static dampproofing in the foundation, through the Rock Wool, Insulation Board and Asbestos Siding in the walls, to the crowning glory of Tapered or Thikbut Strips on the roof...Flintkote Products serve you well and *help you sell.* And your favorite dealer sells and recommends them.

Products of the same high quality are sold by the dealers of Beckman-Dawson Roofing Company and Richardson Roofing, affiliates of The Flintkote Company.

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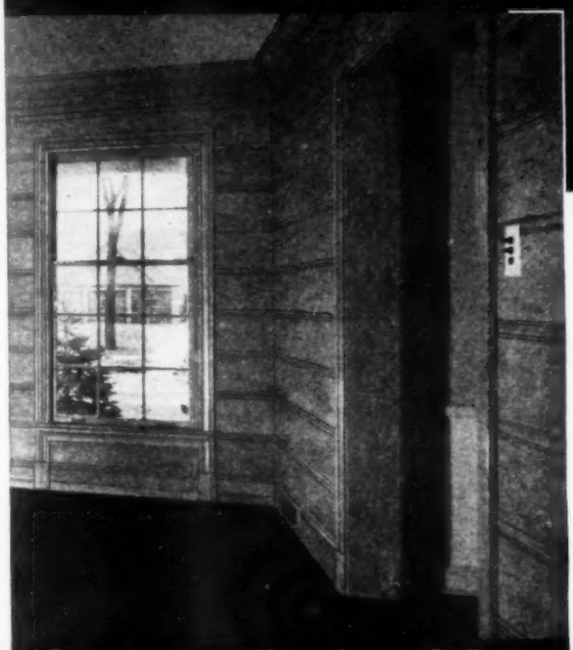
New York . . . Chicago . . . New Orleans . . . Atlanta
Boston . . . Detroit . . . Waco . . . Los Angeles

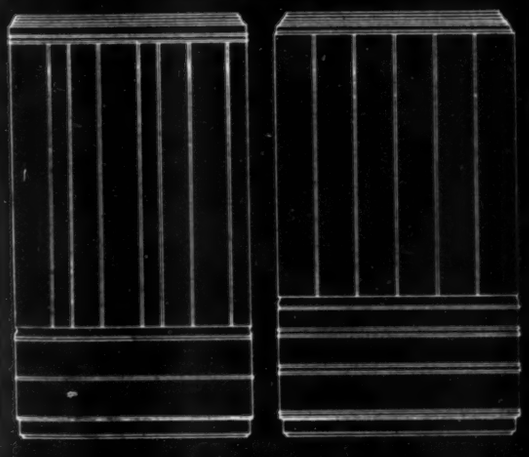
FLINTKOTE ROOFING SIDING · INSULATION

THE FLINTKOTE COMPANY

Illustrating a modern Bradley design in Southern Red Oak. Installed in the "Detroit Builders' Show . . . 1939 Ideal Home", Morison & Gabler, Architects, Detroit.



Typical key to assembly as shown in Bradley's Paneling Detail Sheets.



PANEL—7		PANEL—8	
COVE	8011	COVE	8011
FRIEZE	A	FRIEZE	B
DIVIDING MOULD	M.A.54	V. PANELING	8"
V. PANELING	4"6"6 8"	H. PANELING	4"6"6 8"
H. PANELING	8"	CHAIR RAIL	A 104
CHAIR RAIL	A 104	DIVIDING MOULD	A 54
BASE	A	BASE	A
SHOE	8422	SHOE	8422

How BRADLEY *helps you profit by the swing to* WOOD PANELED WALLS

It's here, dealers! There's no mistaking the pronounced demand for wood-paneled walls. Scarcely a new or remodeled home is being planned without one or more rooms done in the mellow warmth of hardwood paneling.

Alert to this trend from the first, Bradley made a thorough study of panel designs and assemblies. Today the benefits of that study are offered you in the form of BRADLEY BRAND Solid Hardwood Paneling . . . advanced merchandise of the most timely selling appeal. Produced in correct architectural designs, appropriate to modern, conventional or period decorative motifs, Bradley paneling provides you with standardized inventory items adapted to a wide range of panel installations. The material itself comprises interchangeable members, so that a variety of assemblies is possible from the same series of item numbers.

Bradley Hardwood Paneling is manufactured in Red Oak, White Oak and Gum, by the same production methods which have established BRADLEY BRAND Hardwood Flooring as the Standard of Comparison. For assembly detail sheets and descriptive folder, ask your local lumber dealer, or address:

BRADLEY
LUMBER COMPANY
of Arkansas
WARREN, ARKANSAS

DELCO CONDITIONAIR
NOW EQUIPPED WITH
QUIK-ACTION HEAT TRANSMITTER

Built and Backed by GENERAL MOTORS GM

AMAZINGLY QUICKER HEAT
AT FAR LESS COST
PLUS TRUE
WINTER AIR CONDITIONING

New Sensation of the Heating Industry—
Acclaimed Most Important Development in Years!

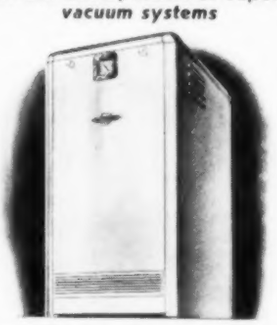
● Exhaustive tests prove the Delco Conditionair with the *Quik-Action* Heat Transmitter generates heat in the fire box almost *9 times faster with the same quantity of fuel.* This means warm comfort provided faster and for less money than ever before. Is it any wonder General Motors' exclusive *Quik-Action* Heat Transmitter has the entire heating industry rubbing its eyes! Here's how it works:

The *Quik-Action* Heat Transmitter is a scientifically constructed chamber of special alloy steel which is suspended in the center of the fire box. The oil-and-air mixture is confined and burned within the Heat Transmitter, which becomes a glowing hot ball of radiant heat in *seconds!* There is no slow-heating refractory material of any kind in the fire box of the Conditionair. The hot, clean, radiant heat from the Heat Transmitter is flashed *directly* to the entire surrounding surfaces of the furnace. There it is immediately picked up by filtered air that is circulated over these surfaces. Then, properly humidified, the warmed, purified air is forced into rooms by the automatic blower.

Practically all of the fuel is converted into heat in the Heat Transmitter. Virtually none escapes unburned.

Consider the Conditionair for your new homes and for modernizing old homes. It provides true winter air conditioning at the cost of automatic heat alone! Complete summer air conditioning equipment may be added to the Conditionair at any time, if provision is made at time of installation. Mail coupon for more detailed information.

DELCO *QUIK-ACTION* AUTOMATIC BOILER
for hot water, steam or vapor-vacuum systems



Has the Heat Transmitter — raises steam 20 to 25% faster

If your plans call for a hot water, steam or vapor-vacuum system, you still can have the extraordinary advantages of General Motors' exclusive *Quik-Action* Heat Transmitter, because it is the heat generator of this boiler, also! Learn about the many other sensationally effective features of this advanced heating machine. Mail coupon today.

DELCO-FRIGIDAIRE
DIVISION GENERAL MOTORS SALES CORPORATION
AIR CONDITIONING & HEATING PRODUCTS
Unit Air Conditioners · Portable Air Conditioners · Commercial Air Conditioning
Oil Burners, Stokers, Oil & Gas Boilers · Oil & Gas Winter Conditioning Units

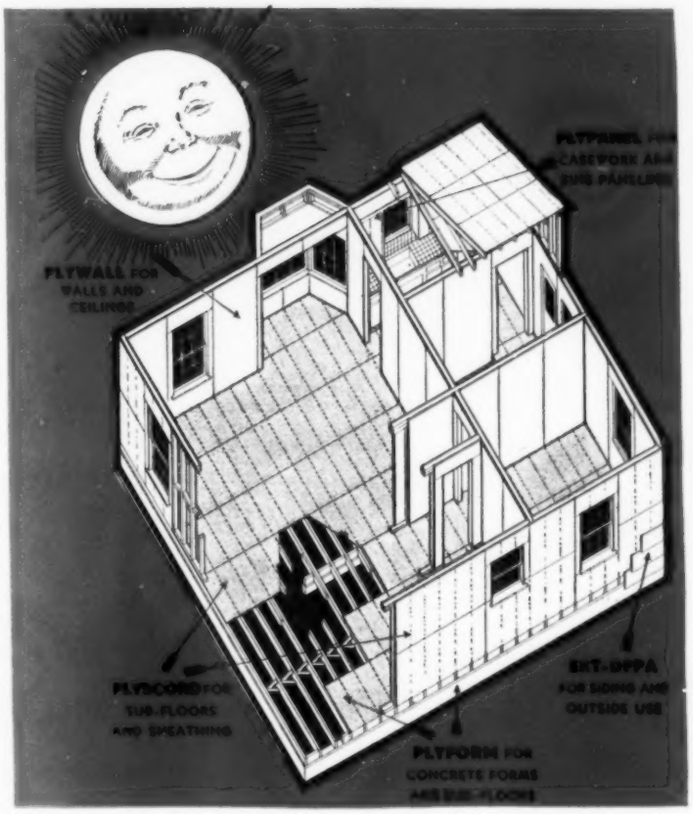
Delco-Frigidaire Conditioning Division
General Motors Sales Corporation
Dayton, Ohio—AB-4
Please send complete information about
☐ Delco Conditionair
☐ Delco Automatic Boiler

Name.....

Address.....

City..... *State*.....

Banish WET WALLS from your houses the dri-bilt way WITH PLYWOOD



1. WHAT IT MEANS

Dri-Bilt with Douglas Fir Plywood means using the proper grades of these big standardized panels for sheathing, sub-flooring, exterior siding, interior walls and ceilings, built-ins—even concrete forms.

2. IT SAVES YOU TIME

Because plywood wall and ceiling construction is bone dry from start to finish, building time is frequently cut as much as 6 weeks. *No waiting for walls to dry out.* The big panels minimize cutting, fitting and nailing.

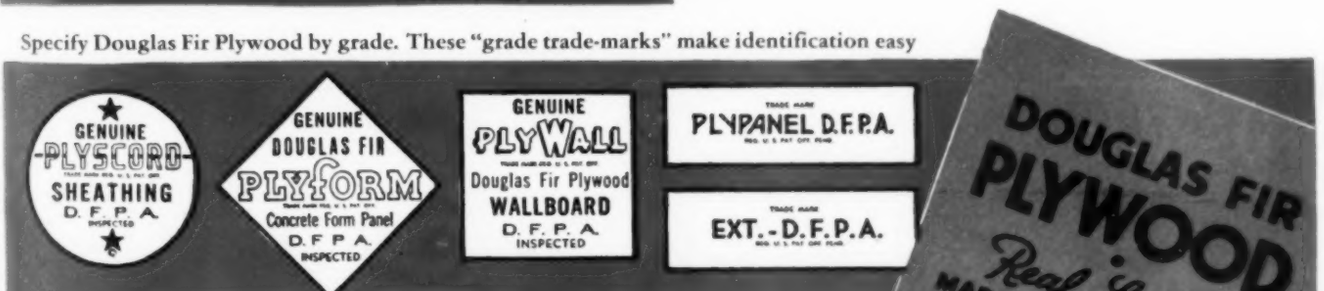
3. IT SAVES YOU MONEY

Shorter building time cuts your interest cost. You can sell for less and thus sell quicker. Douglas Fir Plywood for home construction is accepted by F. H. A. and approved in Uniform Building Code.

4. YOU BUILD BETTER

Exterior walls of Douglas Fir Plywood are 6 times stronger than when horizontal board sheathing is used. Interior plywood walls are puncture-proof—can be finished natural, stained, painted or papered.

Specify Douglas Fir Plywood by grade. These "grade trade-marks" make identification easy



MAIL COUPON NOW. LEARN HOW DRI-BILT CONSTRUCTION CAN BOOST YOUR PROFITS

DOUGLAS FIR PLYWOOD ASSOCIATION, Tacoma Building, Tacoma, Washington
Please send me FREE data on DRI-BILT Douglas Fir Plywood construction.

NAME.....

ADDRESS.....

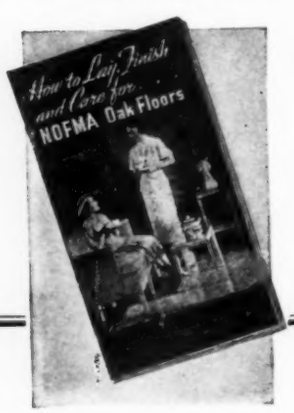
CITY..... STATE.....

This label warrants pedigreed oak flooring

NOFMA Oak Floors Harmonize Home and Happiness

THOSE beautiful oak floors up there in the picture are the proud possession of a satisfied home-owner. More than that, they're the pride and joy of his wife. For, woman-like, she's keen on having her home reflect her own good taste in decoration . . . on having it admired by friends. But most of all, does she revel in these floors because to her innermost self, they're the most beautiful she could have chosen.

When building or remodeling for your own clientele, take a page from the experience of this well satisfied couple. For here's an actual photograph of genuine NOFMA Oak Floors, laid and finished according to specifications issued by the National Oak Flooring Manufacturers' Association. It provides you with a practical example as to the quality of hardwood flooring . . . and the value of intelligent instructions for laying and finishing . . . now available to you through the NOFMA organization.



NOFMA Oak Floors first and last are *Pedigreed* Oak Floors . . . guaranteed for grade by the copyrighted label above. This label, attached to the flooring bundles, identifies each grade so marked, as inspected and certified by the National Oak Flooring Manufacturers' Association, to meet all requirements of Commercial Standards CS-56-36 as issued by the National Bureau of Standards, U. S. Dept. of Commerce. In short, this label is to Oak Flooring what 18 Karat is to gold.

NOFMA certified Oak Flooring is available in all standard grades from representative distributors anywhere in the United States. For further information just ask your favorite distributor or write direct to:

National Oak Flooring Manufacturers' Assn.

DERMON BUILDING **MEMPHIS, TENNESSEE**

NOFMA CERTIFIED OAK FLOORS

The contractor and floor-layer who installed the above floor followed instructions contained in this book. A copy will be mailed you FREE on request.

What's Back OF THIS BIG SWING —to Rō-WAY DOORS

There's a reason why Ro-Way Doors are making such tremendous strides against the entire field. Careful buyers recognize the exclusive features and extra values they give. They appreciate the freedom from bothersome service calls after installation. They see that when it comes to mechanical improvements in Overhead Type Doors . . .

Rō-WAY *Sets the Pace!*

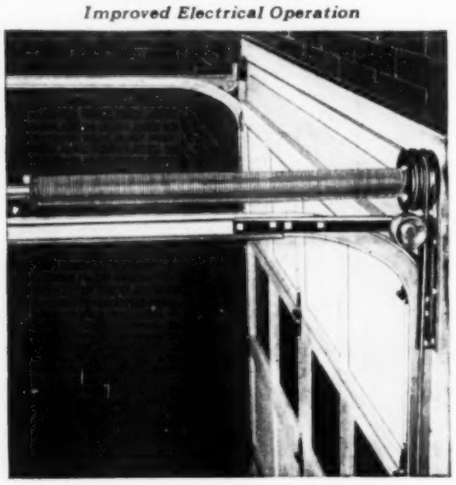
For example, there's "Flash Control," an exclusive Ro-Way feature on electrically-operated doors. In addition to usual "Open-Stop-Close" Control, you get instant reversal in either direction. That prevents many an accident . . . saves many a dollar.

Another Ro-Way innovation is the Ro-To Live Spring, used on Model "J." Here, a single floating spring gives perfectly balanced power . . . always. Ends all side-drift and binding.

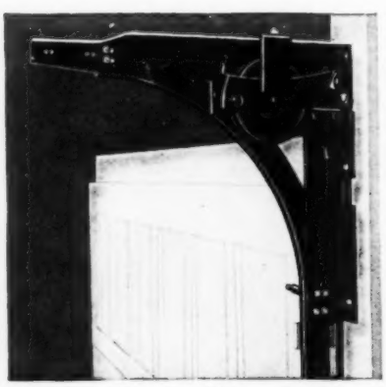
Still another valuable improvement just introduced on the new Model "M" Ro-Way is the "Crow's Foot" Outer Bearing Support, which holds the sheave wheel at its outer end so it can't sag or pull out of line. This "Crow's Foot" design also permits of the use of a larger sheave wheel and gives more quiet operation.

And don't overlook this very important fact about the rust-resisting protection given to the Track and Hardware of every Ro-Way Door. Ro-Way uses the Parkerizing method, the same as is used by the makers of fine motor cars, refrigerator cabinets, etc. Recent Salt Spray Tests showed that the Parkerized hardware used on Ro-Way Doors withstood rust longer than any other rust-resisting materials. All the steel parts were entirely free of white corrosion or bad tarnish at the conclusion of the tests.

"Flash Control"
Improved Electrical Operation



Rō-Tō-*Līve* Spring
No side-drift . . . no binding



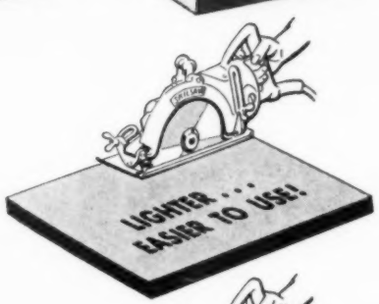
"Crow's Foot" Assembly
Gives Outer Bearing Support

Ro-Way Hardware is made rust-resisting by Parkerizing and Painting.

Ro-Way Overhead Type Garage Doors are setting the pace in mechanical improvements, great value and satisfaction in use. That explains the big swing to Ro-Way Doors. Available in all sizes, for all buildings . . . electrically operated if desired.

Write for Free Catalog, Folders and Price List

ROWE MANUFACTURING CO., 781 Holton St., Galesburg, Ill., U.S.A.



ONLY Modern SKILSAW has the power and speed and ease of operation you have a right to expect when you buy a portable electric handsaw—19 years of constant improvement have made SKILSAW (the original electric handsaw!) THE BEST on the market today!

Test Modern SKILSAW on your toughest sawing jobs and you'll see why it is *more for your money!* SKILSAW out-performs all others under heaviest loads—it saws faster, easier, deeper on any kind of job. It is lighter, better balanced, more convenient to handle. It is engineered to give you many years of trouble-free service. No other saw can give you all of these profit-making features.

Buy a *genuine* SKILSAW now and you'll be money ahead on every job this season!

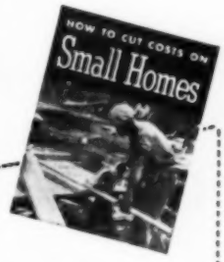
9 POWERFUL MODELS FOR WOOD, METAL, STONE AND COMPOSITION

SKILSAW, INC. 5031 ELSTON AVENUE, CHICAGO

214 E. 40th St., New York ● 52 Brookline Ave., Boston ● 1429 Spring Garden, Philadelphia ● 2124 Main St., Dallas ● 918 Union St., New Orleans ● 1253 South Flower St., Los Angeles ● 2065 Webster St., Oakland

Canadian Branch: 85 Delorsine Ave., Toronto

Sold by leading distributors of mine, mill, hardware and contractors' supplies.



FREE
TO BUILDERS

—this illustrated booklet shows how even homes that sell under $5,000 can be well built for less with SKILSAW.

SKILSAW, INC., 5031 Elston Ave., Chicago
Send us a free copy of "How to Cut Costs on Small Homes".

Name _____

Address _____

City _____ **State** _____

WELDBORD

RESIN-BONDED *Hardwood Plywood* WALLBOARD

WELDBORD stained and painted in store remodeling—Francis Rogers & Sons, Inc., Fordham, N. Y. C.

For Store Modernization

WELDBORD solves the problem of fine, low-cost installations—Large panels with cross-grain construction for extra stiffness—hard, smooth, grain-free faces for perfect finishing with either stain, paint or enamel or for the direct application of wallpaper.

—Wherever economy and durability are at a premium, **WELDBORD** meets all requirements.

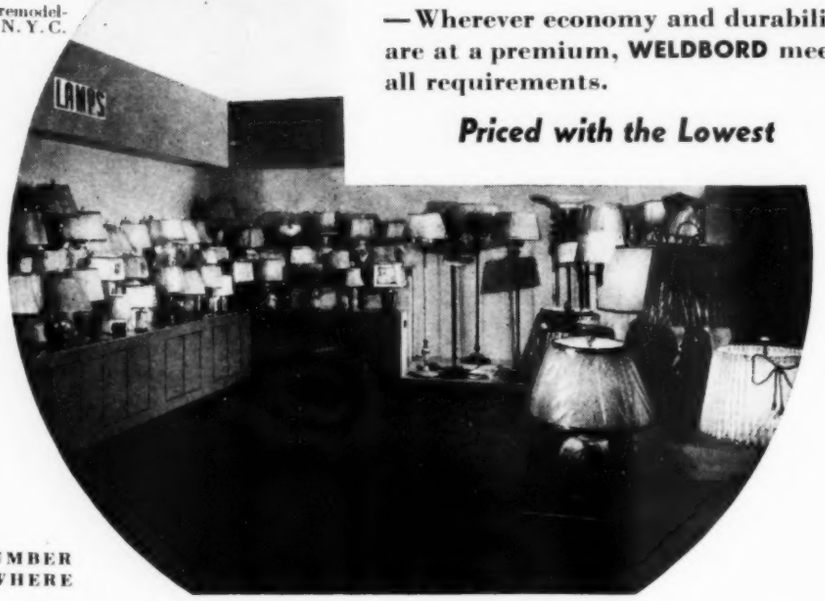
Priced with the Lowest

WELDBORD is available in ¼″ thickness only—panels 96 x 48, 84 x 48 and 72 x 48 to retail at

7¢

Per square foot*

**Price varies slightly according to location of lumber dealer.*



STOCKED BY LUMBER DEALERS EVERYWHERE

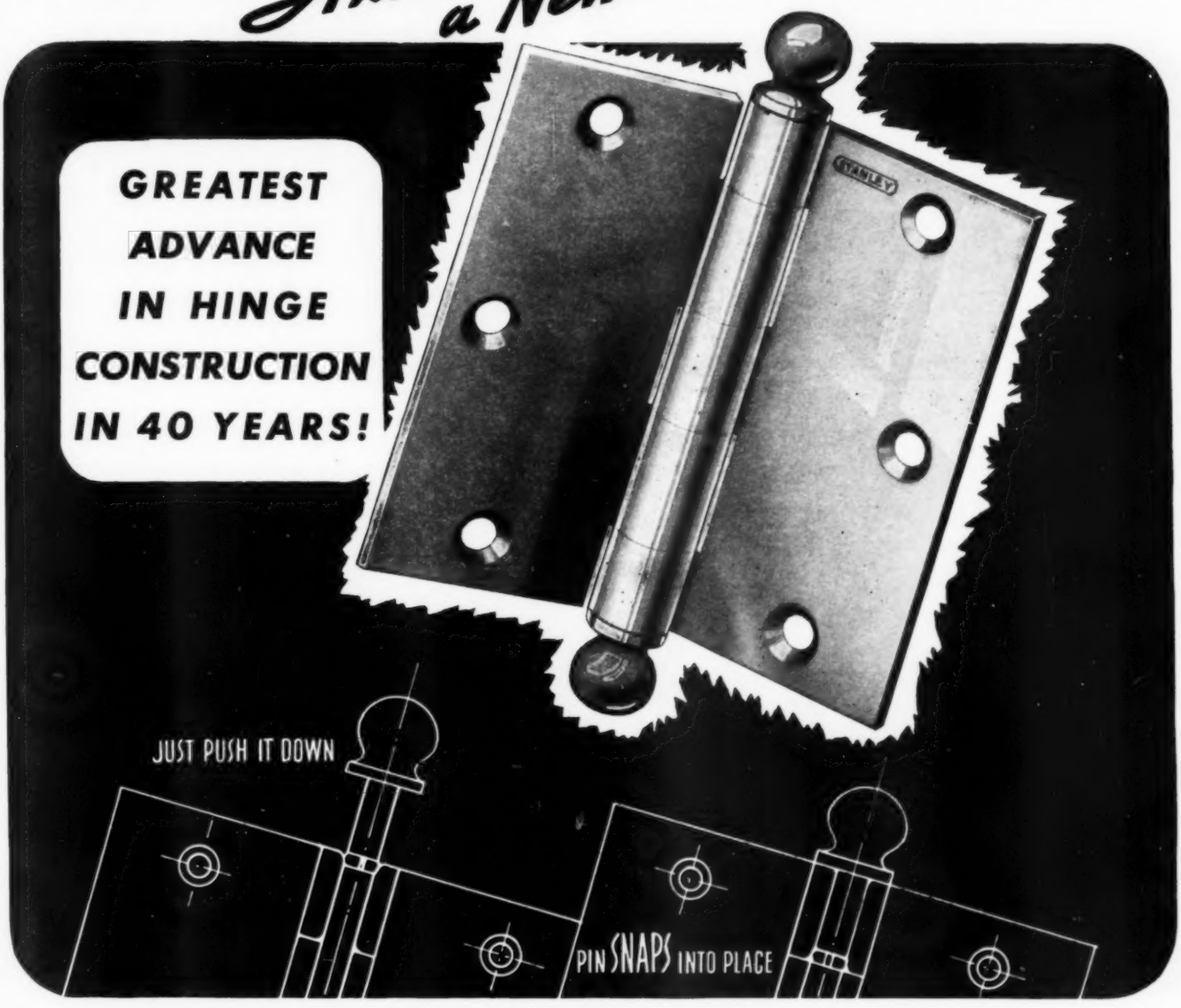
UNITED STATES PLYWOOD CORPORATION

Executive Offices: 616 West 46th Street, New York, N. Y.

Mills: Algoma, Wis., Birchwood, Wis., Seattle, Wash., Orangeburg, S. C.

Branch Offices and Warehouses: Baltimore, Boston, Brooklyn, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Newark, New York, Philadelphia, Rochester, San Francisco, Seattle

STANLEY *Announces a New* NON-RISING PIN *



Anyone who knows the shortcomings of the common winged type of non-rising pin in door butts will appreciate that at last, this new Stanley design is the simple solution of the problem.

• •

The non-rising feature of this new pin is secured by means of a split ring attached in a groove in the pin. This split ring fits into a pocket formed in the bottom of the top knuckle of the butt. When the pin, through the action of the door, attempts to rise, the split ring comes in contact with the inside of the knuckle above the pocket and is prevented from further rising.

Outstanding features of the new pin are: extreme simplicity in construction, its effectiveness in operation and its ease in setting and withdrawing.

• •

To the builder, this new Stanley feature is further evidence of leadership in hinge construction. See them at your dealer's. It is impossible to so schedule production to introduce simultaneously this new feature into all class numbers, sizes and finishes, but from now on this is our standard type of pin and eventually will appear in all plain joint butts of the 241 grade and up. **The Stanley Works, New Britain, Conn.**

* PATENT PENDING

STANLEY

TRADE MARK

HARDWARE FOR CAREFREE DOORS

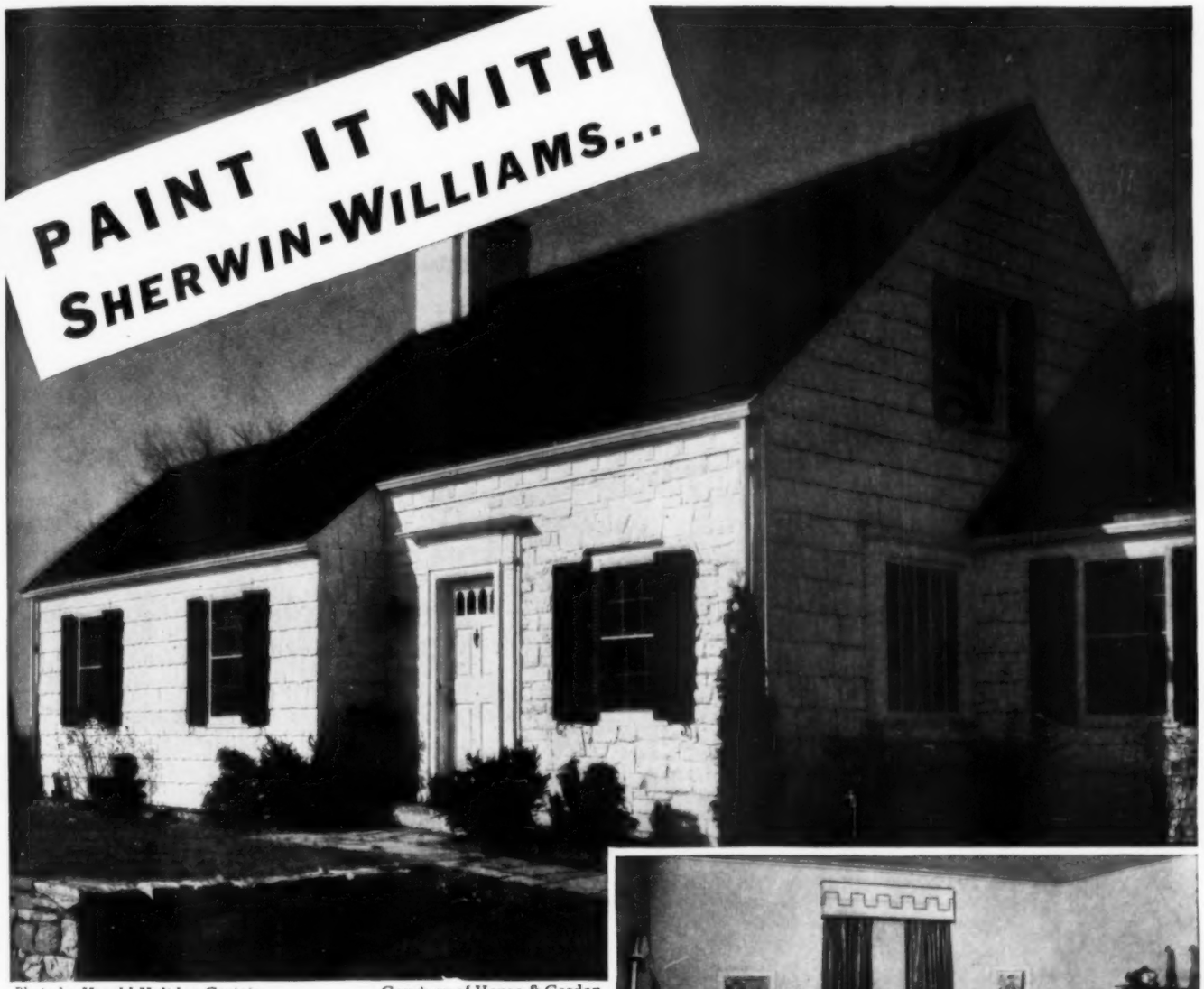


Photo by Harold Haliday Costain Courtesy of House & Garden

Photo by Frank Randt

SELL IT WITH SPEED AND CONFIDENCE...

Here's a quick, easy way to catch the attention... boost the confidence of your house-hunting prospects. *Paint your houses with Sherwin-Williams Paints . . . and advertise the fact!*

You'll find your prospects know the outstanding quality of Sherwin-Williams Paints. For they've admired its distinctive colors . . . richly beautiful surface . . . in the finest of model homes. They've seen it on carefully planned housing projects. They've read about it in their favorite magazines . . . heard about it from their friends.

When your houses display a "Painted with Sherwin-Williams" sign, you've got your prospects more than half sold . . . and altogether convinced your properties must be as good as they look!

There's a complete line of Sherwin-Williams Paint for every home painting need. You can rely on them to compliment your architectural designs with their attractive appearance. And complement your good workmanship with their obvious quality. *See our catalog in Sweet's.* For further information write The Sherwin-Williams Co., Cleveland, Ohio, and all principal cities.

COVER THE EARTH

SHERWIN-WILLIAMS PAINTS

CHEVROLET TRUCKS

UNBEATABLE FOR DEPENDABILITY AND ECONOMY!

There is every reason in the world why you should now benefit by what Chevrolet has to offer in the way of better trucks, greater truck economy, and wide range of models covering every possible truck requirement.

Because, in 1939 Chevrolet is in a better position to meet your hauling needs—whatever they are—than at any other time in Chevrolet history. All the way from smart, speedy delivery trucks to massive heavy-duty units of 14,000 pounds gross rating, Chevrolet offers 45 models . . . eight different wheelbases . . . and an amazing variety of factory-built bodies.

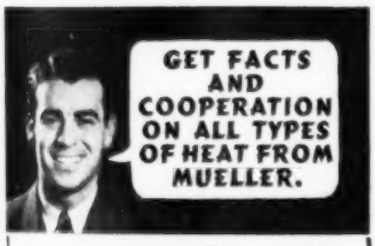
This is a good time to take advantage of Chevrolet dependability and economy—qualities which have made Chevrolet the nation's largest builder of trucks.

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation*, DETROIT, MICHIGAN
General Motors Instalment Plan—convenient, economical monthly payments. A General Motors Value.

CHEVROLET

MASSIVE NEW SUPREMLINE TRUCK STYLING . . . COUPE-TYPE CABS . . . VASTLY IMPROVED VISIBILITY • FAMOUS VALVE-IN-HEAD TRUCK ENGINE • POWERFUL HYDRAULIC TRUCK BRAKES (Vacuum-Power Brake Equipment optional on Heavy Duty models at additional cost) • FULL-FLOATING REAR AXLE on Heavy Duty models only (2-Speed Axle optional on Heavy Duty models at additional cost)

Amazing Invention — Mueller Heat Levelizer for Gas Furnaces Ends Uneven Heat

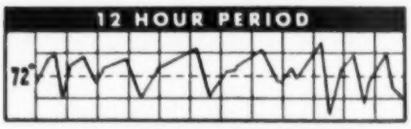


COAL Mueller offers a complete line of coal-fired furnaces in cast iron and steel. Also a new furnace with exclusive features for stoker use.

OIL Mueller's achievements in oil heat are the talk of the industry. Patented Air Conditioning Oil Furnace cuts fuel cost—assures complete comfort with air conditioning.

GAS Heat Levelizer and Heat Speeder, exclusive with Mueller Gas Era Furnaces, assure comfort and convenience at low cost. Mueller also manufactures a line of Gas Era Boilers.

Heat Levelizer supplies a continuous flow of regulated heat, turning the flame up or down as needed to maintain an absolutely uniform temperature. It is not "on-and-off" control.



WITHOUT MUELLER HEAT LEVELIZER

This is how a chart of the temperature looks in most any home with ordinary thermostatic control. This is typical of the performance of most gas-fired furnaces. On-and-off operation causes temperature variations and fuel waste.

WITH MUELLER HEAT LEVELIZER

This is a typical chart of 12 hours of Gas Era Furnace operation with Mueller Heat Levelizer. Outside temperature may vary 20 to 50 degrees during the same period, while indoors you enjoy uniform temperature . . . no uneven heat.

This great new invention cuts fuel costs to the bone. It puts automatic gas heat within reach of people who never thought they could afford it before. It ends fuel waste . . . Supplies all the heat desired . . . No more . . . No less. The Heat Levelizer is available only on Mueller Gas Era Furnaces. Before installing any furnace be sure to get facts from Mueller. Fill out the coupon below.

SEND FOR FREE FURNACE BOOK

Post yourself on the amazing changes taking place in home heating. Get your facts from the one unbiased source—MUELLER—who makes all types of heating equipment for all fuels. Send coupon below for Mueller's great new book. Proclaimed by experts as the most informative writing on furnace design in recent years.

MUELLER (M) MILWAUKEE

HEATING AND AIR CONDITIONING

COAL • OIL • GAS

SEND COUPON TODAY

•

L. J. MUELLER FURNACE CO.
2016 W. Oklahoma Ave. Milwaukee, Wis.

L. J. MUELLER FURNACE CO.
2016 W. Oklahoma Avenue, Milwaukee, Wisconsin

Please send me "THE NEW TREND IN HOME FURNACE DESIGN"; also literature describing

☐ Heat Levelizer
☐ Gas Furnaces ☐ Coal Furnaces
☐ Oil Furnaces ☐ Gas Boilers

Name _____

Address _____

City _____ State _____

Both Views: The Glass Kitchen. Sponsored by the Glass Container Association, New York City.

INSULUX CATERS TO THE "kitchen" MARKET

● You don't sell kitchen equipment, but you can cash in on this most important and stable market with Owens-Illinois Insulux Glass Block.

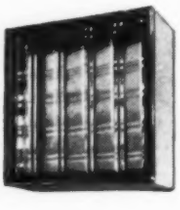
A faithful domestic servant, Insulux adds cheer to daily chores by transmitting 41 to 86.5% of available daylight depending on the design used. Yet it retains that privacy which women want at home.

For years the ideal food container renowned for cleanliness and sanitation, glass is now an established building material which fits the kitchen to a "T."

Spic and span is the kitchen of Insulux. Dust just can't hide on its crystal-clear surface. As you know, glass instantly brings to light the smallest deposit of dirt. In new homes, Insulux is also an important aid to air conditioning.

Sell 'em a panel of 50 Insulux Glass Blocks for the kitchen and they'll want it throughout the house. Insulux is the glass block proved by more than 50,000 actual installations. Owens-Illinois Glass Company, Insulux Products Division, Toledo, Ohio.

OWENS · ILLINOIS **INSULUX**



FIRST IN GLASS **GLASS BLOCK**

10 Minutes per Opening INSTALLATION TIME!

UNITS ARE DELIVERED
Frames assembled, factory fitted sash with Silver-Seal weatherstrip applied, hung with flat weights and chain.

SET UNIT IN WALL
Units are set by nailing weathertight wide blind stop to studs, which insures a weathertight joint.

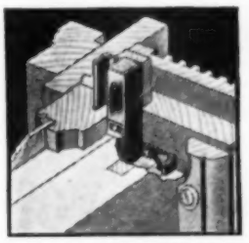
THE JOB IS DONE
Complete and ready for trim. Labor costs are saved. A better job results.

With Assembled
ANDERSEN NARROLINE
Complete Double Hung Window Units

Contractors tell us that 10 minutes per opening installation time is common enough when Andersen NARROLINE Complete Double Hung Window Units (assembled) are used on the job. Many contractors who are building in the low priced brackets find that it pays to install Andersen Narroline because of savings made in carpenter time.

Homes Sell Faster with Features like Andersen Units

Andersen Narroline Double Hung Window Units, however, do far more than save carpenter time. Contractors tell us that homes actually sell faster with Andersen Narroline. Show a prospect Andersen Narroline and he is immediately impressed with their weathertight features, their beautiful narrow lines. Both are factors he can readily see and appreciate.

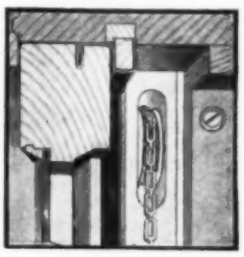


Section through jamb showing Andersen double action Silver-Seal Weatherstrip. Has both rib and spring metal contact and frictionless surface.

Specify This Complete Unit

The Andersen Narroline No. 680 unit includes Andersen's famous leakproof frame and 1½ inch fitted sash. Sash glazed SSA bedded in putty. Andersen Silver-Seal double action weatherstripping for complete opening. Special flat weights, noiseless pulleys, and galvanized sash chain.

See your dealer for demonstration or write us. Andersen Corp., Dept. PB49, Bayport, Minnesota.



True counterbalancing insures a lifetime of trouble-free sash operation. Flat weights allow for narrow trim.

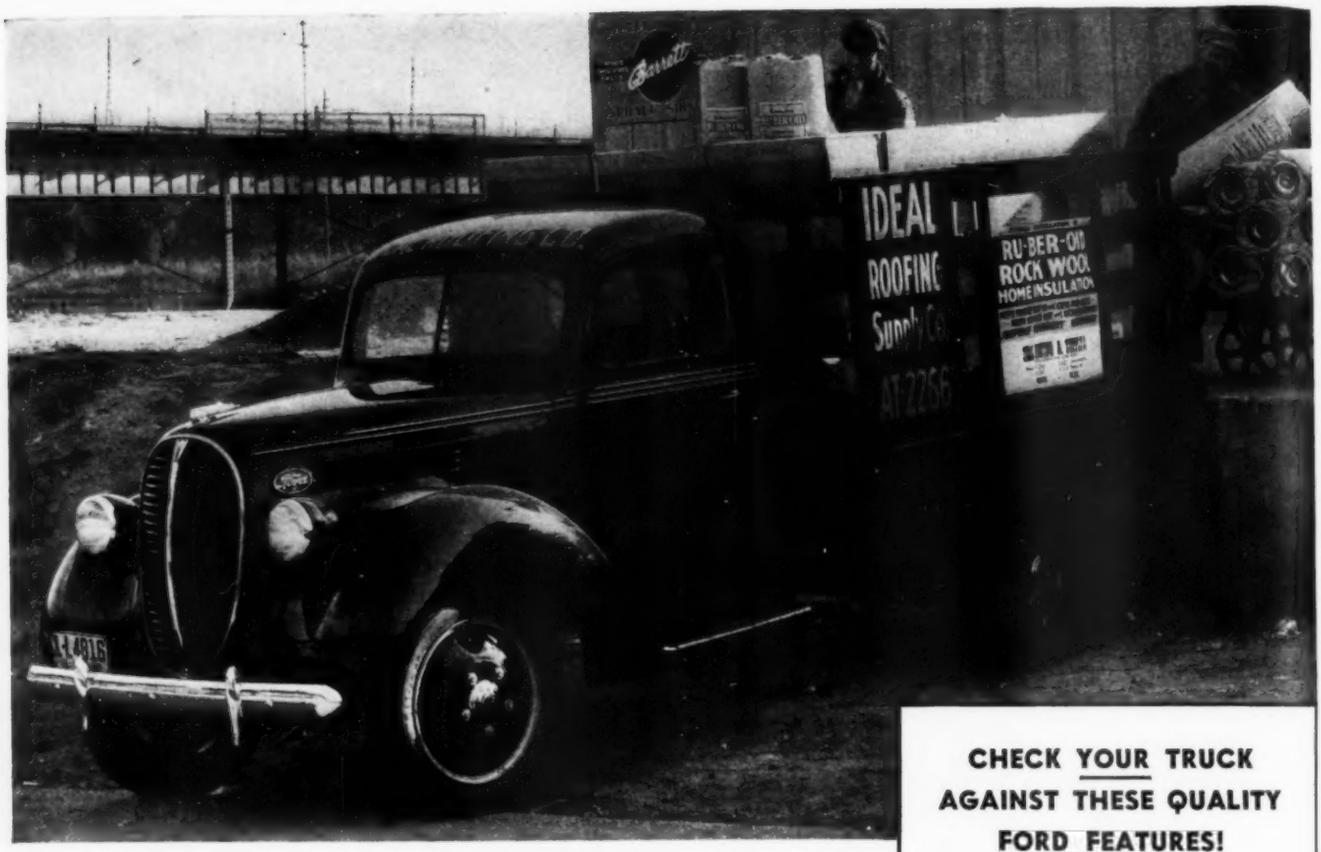
LICENSE NO. 129 TOXIC-PRESERVATION APPROVED NATL. DOOR MFRS. ASSN.

TOXIC TREATED AGAINST TERMITES AND DECAY

All Andersen Units carry the seal of approval of National Door Mfg. Assn., for toxic treatment against termites and decay. An extra protection!

Locked Sill Joint is leakproof. Steep sill slope and chamfered blind stop insure quick drainage.

Andersen Corporation, Bayport, Minn.



HELP YOURSELF TO TOP ECONOMY —PUT A FORD V·8 ON YOUR JOB!

If you start reaching for the red ink when it comes time each month to tally up your hauling or delivery costs, it's time to change to Fords. The 1939 line of Ford V-8 Trucks and Commercial Cars hits high hauling costs right between the eyes. These modern units are built to give you the over-all economy that's so important in keeping costs down.

Any way you figure it, Ford performance adds up to money-saving performance. The original price tag is low. Insurance and license fees are low. Operating and up-keep costs are low. And so is depreciation.

On top of these savings, Ford gives you the tough, rugged construction that defies hard service — keeps your truck on the job.

Why not see how a Ford Truck fits into your hauling picture? Get in touch with any Ford dealer, and ask about an "on-the-job" test that will give you the facts before you buy.

CHECK YOUR TRUCK AGAINST THESE QUALITY FORD FEATURES!

- ***V-8 Engines*** — 95, 85, 60 hp. Smooth, dependable, low-cost power. Quality materials and precision workmanship for efficient operation and long life.
- ***Semi-centrifugal Clutches*** — Non-tiring pedal action. Centrifugal force provides tremendous power-transmitting capacity. Up-keep costs kept at a minimum.
- ***Sturdy, Trouble-free Transmissions*** — Large roller and ball bearings for all forward speeds reduce friction, save power. Oil-hardened chromium-steel gears for long service.
- ***Full Torque-tube Drive***—Springs relieved of driving and braking stresses provide better cushioning of truck and its load. Shackle-bolt wear reduced, spring life prolonged.
- ***Rugged Rear Axles*** — Driving pinion is straddle-mounted to maintain gear tooth alignment. All truck axles are full-floating, with weight carried on axle housing — none on axle shafts. These features increase dependability and long service, reduce up-keep expense.
- ***Big, Powerful Hydraulic Brakes*** — Equalized braking action for straight stops. Big brake drum diameters and large lining areas for long brake life, low maintenance.

In every detail, the quality of all Ford cabs and bodies matches the high quality of Ford chassis. Their exceptional durability means long service with low up-keep cost.

FORD V·8 TRUCKS

AND COMMERCIAL CARS

Ford Motor Company • Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons and Transit Buses

the whitest

ASBESTOS-CEMENT SIDING SHINGLES YOU'VE EVER SEEN...

● Not only is the new "Century" White Siding Shingle visibly *whiter* than any other asbestos-cement shingle available today . . . it is one of the strongest, toughest asbestos-cement shingles ever built.

It is made of the highest quality pure asbestos fibre, Portland cement and pigment for coloring—nothing else. As a result, it fully meets the rigid U. S. Government standards. The strength of each shingle is tested, and the modulus of rupture must test 3000 pounds or greater—or the shingle is rejected.

That gives you something to talk about in selling new homes or remodeling. Your prospects will see the most beautiful siding shingle of its kind—the whitest, and one of the most handsomely textured and styled. Its graining is noticeably deeper, so that a real wood texture is obtained. It comes in No. 57 Broadsiding, with wavy butt line.

IN ADDITION, "Century" White Siding Shingles are available with a special treatment that makes them water-repellent to a degree you've never before encountered in this type of shingle. And naturally, like all K & M "Century" Asbestos-Cement Shingles, they are fire-resisting, termite-proof and weather-resisting—built for generations to come.

MAIL THIS COUPON TODAY

KEASBEY & MATTISON COMPANY AMBLER, PENNA.

District Sales Offices in Principal Cities

The Keasbey & Mattison Company
Ambler, Penna.

Send me full details on the new "Century" White Siding Shingle.

NAME.....

NAME OF FIRM.....

ADDRESS.....AB-1

INSIDE . . . AND OUTSIDE WALLS

In building and remodeling inside and outside walls, the needs listed above are met by . . .

THE INSULITE WALL OF PROTECTION

"Built With Insulite Modern Materials"

NEW INSULITE EXTERIORS

NEW INSULITE INTERIORS

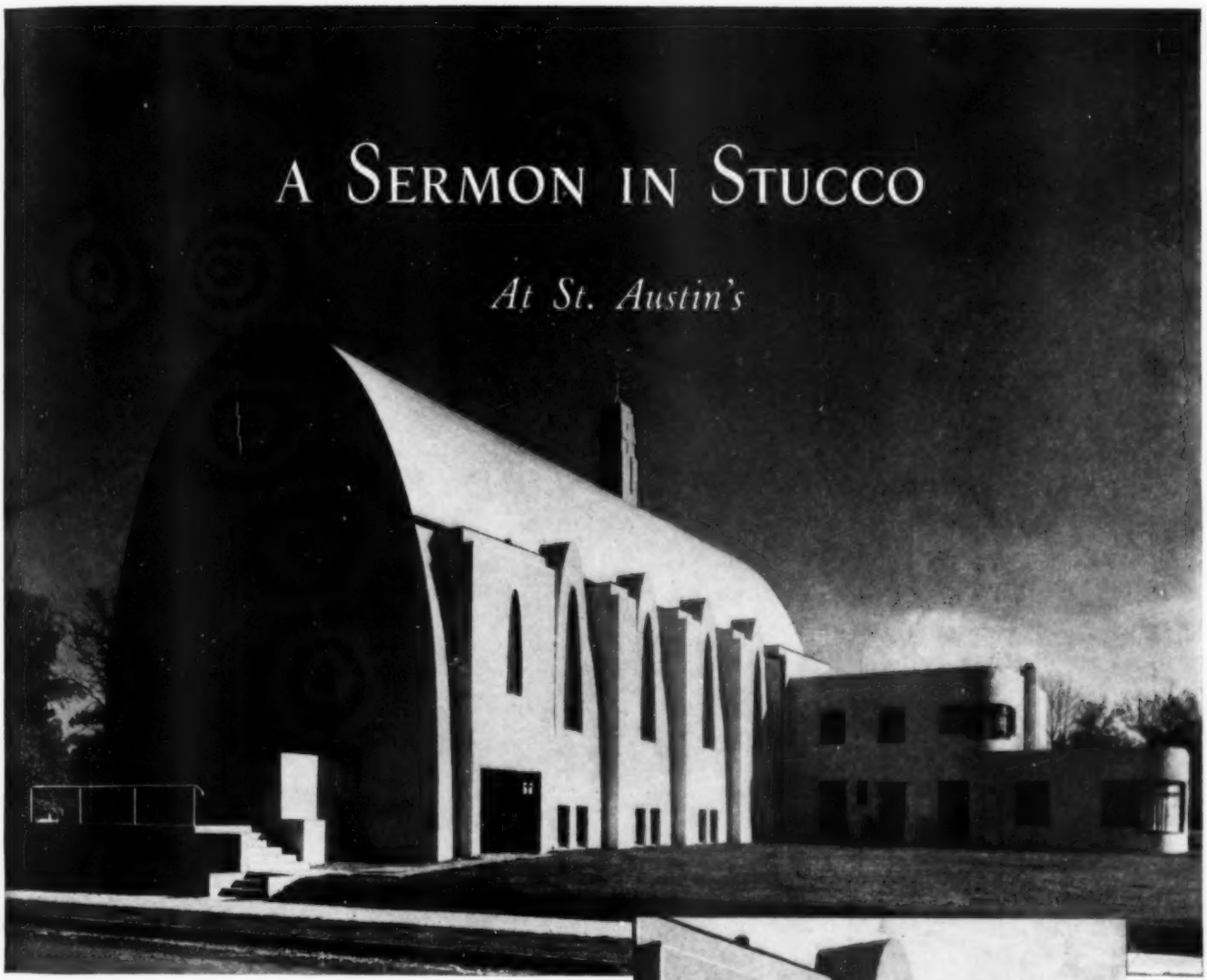
For More Information, Write Dept. AB49

The INSULITE COMPANY

MINNEAPOLIS, MINNESOTA

A Sermon in Stucco

At St. Austin's



● Stucco helps to beautify St. Austin's Church and Parish House in Minneapolis. Atlas White was used in the stucco finish coat. Two under coats were portland cement stucco over expanded metal lath attached to frame construction. Architects—Bard and Vanderbilt, Minneapolis. Contractor—Herman Jeub.

A CHURCH can be modern in appearance and still retain its churchly beauty and dignity. That is the sermon preached by the picture of St. Austin's Church and Parish House in Minneapolis.

The simplicity of design, the sharp, clean-cut curved and straight lines that help to give the modern touch, are easily attained with the aid of stucco. In this structure, as in many others today, the stucco finish is made with Atlas White portland cement.

For the next job on your board, whether a new structure or an old one to be modernized, consider Atlas White stucco. Its initial cost is always moderate. It is permanent and lastingly attractive. It discourages maintenance costs. Universal Atlas Cement Co. (United States Steel Corporation Subsidiary) Chrysler Building, New York City.

A FACTORY-PREPARED STUCCO IS PREFERABLE

AB-S-1

STUCCO MADE WITH **Atlas White** PORTLAND CEMENT

MORE POWER

CAPACITIES ½ TO 15 TONS • THE TRUCK OF VALUE •

with Astonishing Gas Savings!

You get more pulling power with a GMC—and now 1939 owner reports prove that GMC's are breaking gas economy records right and left! Says one: "Almost 25% reduction in fuel consumed over other trucks used on the same routes." Says another: "We are now getting 10% to 20% more mileage with our new GMC." Measured fuel savings up to 40% are on record! Pull your loads easier—*at less cost*—with a GMC!

NOW—Lowest Prices in GMC History!

Our own YMAC Time Payment Plan assures you of lowest available rates

GMC TRUCKS TRAILERS - DIESELS

Perforated Rocklath Receives Nation-wide Approval

The Croydon Arms Hotel, Miami Beach, Florida. E. Dean Parmalee, Architect. Carl Green, General Contractor

Typical Is This Distinguished Florida Hotel

Perforated Rocklath*—The Fireproof Lath was used in the construction of the Croydon Arms Hotel at Miami Beach because of its tested and proved superiority as a plaster base—because of its adaptability to a building of this type.

And because of its fireproof qualities Perforated Rocklath is giving Croydon Arms guests added fire protection.

Plaster is WELDED and RIVETED to its surfaces—resulting in walls that are fine appearing and crack resistive.

Yet with its many superior advantages Perforated Rocklath is comparatively inexpensive—sells for little, if any, more than old-fashioned combustible lathing materials.

To give *your* customers good-looking fire resistive walls and ceilings that stoutly resist cracks—specify Perforated Rocklath for every job—hotels, stores, homes, offices, apartments.

Write today for complete information on this remarkable new fireproof lath. UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago, Ill.

*Registered trade-mark

PERFORATED ROCKLATH

THE FIREPROOF *LATH*

AB-4

There must be a Reason

-WHY **The Home Building Corp. sold 33 houses in 6 months**
KANSAS CITY, MO.

$4335

-WHY **County Homes, Inc. sold 58 houses in 11 months**
WHITE PLAINS, N. Y.

$6000

-WHY **E. E. Olsen Construction Co. sold 53 houses in 4 months**
PITTSBURGH, PA.

$8590

-WHY **Callan Bros., sold 80 houses in 26 months**
GREAT NECK, L. I.

$11,000 to $26,000

YES there is a reason. The houses are attractive, well constructed, carefully planned. But that's not all. Each of these builders features General Electric equipment—G-E Kitchens, G-E Wiring and G-E Heating—and each builder is taking advantage of the special services offered by the G-E Home Bureau, a complete department specializing on builders' problems and needs. These services include:

1. A tested house merchandising plan —an aid in selling which builders everywhere are using successfully.
2. An Architectural Engineering Service—The Home Bureau does not furnish plans, but its staff of experts will check yours and make suggestions—wiring, heating, air-conditioning, lighting, kitchens and laundries.
3. An Advertising Service—Tested advertising campaigns, layouts and copy are ready and adaptable to your use.

Let the G-E Home Bureau tell you more about this tested house merchandising plan. Mail the coupon today.

General Electric Home Bureau
Dept. AB4, 570 Lexington Avenue, N. Y.
Please send me details of G-E's house merchandising plan.

Name .....

Address .....

City .....

GENERAL ELECTRIC

ARE YOU BUILDING THE KIND OF HOUSES THAT SELL EASILY... *at a Good Profit?*

Some contractors have had rough going the past few years. They've built houses for the market, then spent all the possible profits in selling them.

At the same time, other contractors, in the same towns have been building and selling houses—and making money.

What's back of this difference?

A new building trend—brought about by the development of new materials that offer new advantages, which people are demanding.

Home buyers today are thinking in terms of permanence, comfort, low upkeep. Many contractors have correctly appraised the new trend and found the answer to "Building homes that sell" in the use of

Carey
BUILDING PRODUCTS

Show a prospect a home built of Carey Products and you arouse buyer enthusiasm. Insulated with Carey Rocktex, the home offers maximum comfort, summer and winter, with big fuel savings. Sided with fireproof Careystone, it will wear like rock, never need paint protection, replacement or repairs. A roof of Carey Cork-Insulated Shingles assures the buyer of a long-wearing roof and roof insulation, both for roof cost.

Carey Products offer new advantages that meet modern needs. Backed by 66 years of manufacturing experience. Nationally advertised and recognized everywhere for their dependability. Buyers know that the use of Carey Products in a home means extra value, long life, modern comfort, low maintenance . . . and *these are the things that close sales today.*

Write for all the facts about Carey Products—get on the right track—build houses that sell.

CAREY CORK INSULATED SHINGLES

The asphalt shingle that gives long-wearing roof and roof insulation, both for roof cost only.

CAREY ROCKTEX INSULATING WOOL

Loose; Granulated; Pads; Bats. Reduces room temperatures in summer; cuts fuel consumption in winter. Pays for itself

CAREYSTONE SIDING AND SHINGLES

Made of asbestos and cement. Fireproof; durable as stone. No painting; no upkeep.

CAREY ROLL ROOFINGS

A complete line to meet every roll roofing requirement, including Carey Flexible Cement—toughest composition roof made.

CAREY ROOF COATINGS

Paints and Cements to handle any surface protection problem from roof to basement, indoors and out.

THE PHILIP CAREY COMPANY • Lockland, Cincinnati, Ohio

Dependable Products Since 1873

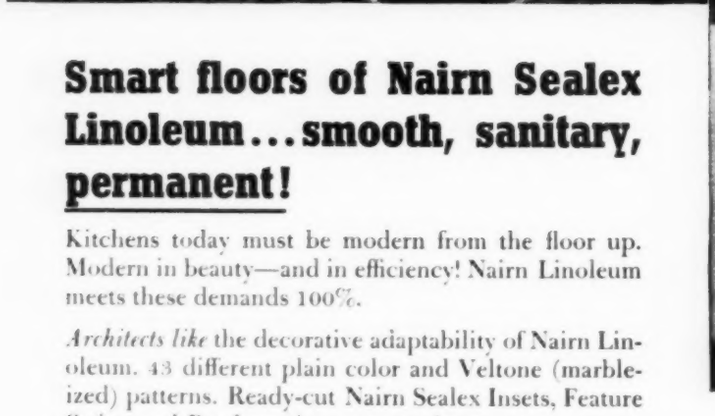
BRANCHES IN PRINCIPAL CITIES

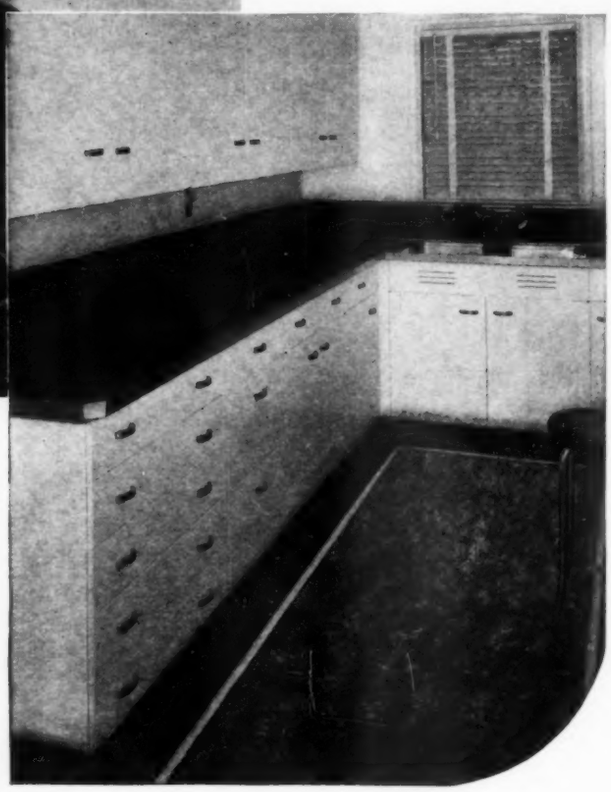
Specification for quick sales and rentals... NAIRN LINOLEUM

Nairn Linoleum—a popular Veltone design, with ready-cut border and feature strip. Specially designed inset cut from Nairn Plain Linoleums.

☆

Here, Nairn Linoleum on counter tops helps reduce clatter and breakage of dishes. Also note the sanitary, one-piece cove base at floor. No cracks to harbor dirt!





Smart floors of Nairn Sealex Linoleum... smooth, sanitary, permanent!

Kitchens today must be modern from the floor up. Modern in beauty—and in efficiency! Nairn Linoleum meets these demands 100%.

Architects like the decorative adaptability of Nairn Linoleum. 43 different plain color and Veltone (marbleized) patterns. Ready-cut Nairn Sealex Insets, Feature Strips and Borders. An opportunity to create smart, *individual* designs!

Builders like the practical advantages. Nairn Sealex Linoleum is smooth, sanitary, easy to clean. Gives heaviest-duty service with a minimum of maintenance.

Installed by authorized contractors, Nairn Linoleum is guaranteed. Write for free samples now!

CONGOLEUM-NAIRN INC., KEARNY, N. J.

NAIRN
TRADEMARK REGISTERED
LINOLEUM
Floors and Walls

They Looked Ahead to *Pleasant Living* . . . and Stopped "Looking Further"

Home lovers find it hard to resist Crane bathrooms such as this one—combining the latest conveniences with maximum charm of appearance—and available at every price range.

"JUST looking around," said the Browns, as they walked into the house marked "For Sale." And they meant it, too—until they came to the Crane kitchen—*Family-Planned* to make living more enjoyable and kitchen duties easier. They lingered to admire—to picture the pleasant times they could have in such a kitchen—and to buy.

If YOU have prospects who want to get more fun out of living—who regard a house as something more than walls and a roof . . . profit from Crane research and experience in putting more "sales appeal" into kitchens. Whether the kitchen is simple or elaborate—held to a rigid cost standard or with more freedom for "extras"—Crane has practical suggestions for combining greater livability and attractiveness with maximum efficiency.

A copy of the *free* Crane book, "Family-Planned Kitchens," will open your eyes to some new possibilities in reaping more profit from the homes you sell—in any price range. Send today for your copy—use the coupon—and ask about the Crane Budget Plan! No obligation.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE • PLUMBING • HEATING • PUMPS

CRANE CO. AB 4-39
836 So. Michigan Ave., Chicago, Illinois
Gentlemen: I want a copy of "Family-Planned Kitchens" —without obligation, of course.

Name.....

Street.....

City.....*State*.....

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS

PREVIEW OF A 1940 OWNER...

RIGHT now is the best time to start including L·O·F "Window Conditioning" (double-glass insulation) in *every* house you build.

Prospective home owners are insulation-conscious. They recognize "Window Conditioning" as one of the most effective types of insulation. Through continuous L·O·F national advertising they know what "Window Conditioning" does—(1) Reduces fuel bills—in many cases as much as 30%. (2) Makes uniform temperatures easier to maintain throughout a house. (3) Lessens drafty danger zones near windows and floors. (4) Makes healthful humidity possible without foggy windows, soiled draperies and excessive moisture on window sills. (5) Pays for itself in just a few winters.

Give owners more comfortable, more economical homes . . . give them homes that are "Window Conditioned."

. . .

Libbey·Owens·Ford Glass Company, Toledo, O.

LIBBEY·OWENS·FORD *QUALITY GLASS*

THIS can't happen HERE

NEW BARB-LOCK SHINGLE ASSURES PERFECT ROOF DRAINAGE

THE Barber Genasco Barb-Lock Roof shown on the attractive home above introduces a new development in asphalt roofing, and offers several unique features that you should know about.

BARBER Genasco ROOFINGS

SHINGLES • SIDINGS

ROLL ROOFINGS

BUILT-UP ROOFINGS

Attractive Appearance, Beautiful Colors

There's a pleasing "thatched" effect with the new Barb-Lock Shingle. It lays up with a deep "shadow line" and produces a most appealing over-all design. Available in seven beautiful colors. Here is a shingle you will *want* to recommend and use.

Patented, Exclusive Locking Device

A simple, ingenious fold-under locking device fastens each shingle to the adjoining shingles in a vise-like grip.

Accentuated Drip Edge

Complete drainage and additional weather protection are assured by a drip edge that diverts water *away* from the between-shingle laps, and is designed to prevent accumulation of rain or snow *under* the shingle.

The Vital Element

The new Barb-Lock, like other Barber Genasco Roofings, offers the superb protection of genuine Trinidad Native Lake Asphalt — *The Vital Element.* No other roofings are made with this native *water*proofer and *weather*proofer. For full details, address: Barber Asphalt Corporation, Barber, N. J.

FOR FURTHER INFORMATION
SEE OUR CATALOG IN SWEET'S

COMPLETION . . . DAYS SOONER

When Home Loans Are Approved Promptly!

YOU don't have to put up with the red tape that so often delays home loans! Your local Savings or Building and Loan Association will frequently have an approval for you 48 hours after the application is filed! Construction money moves fast, too. For this business was built on prompt, efficient service!

Years of experience have keyed our procedure to your requirements. Savings, Building and Loan Associations have a background of 10,500,000 American homes financed soundly, conveniently and promptly. For over 100 years our group has been America's most popular home financing system.

Records like these aren't easy to establish. Yet institutions like ours consistently finance more home loans than all other financing institutions put together. Here are the reasons why—

1. Prompt service, without red tape, all the way through.
2. Convenient, easy-to-understand loans paid back like rent on a monthly-repayment, long-term plan.
3. Friendly service where a loan means a good neighbor, not just a number.

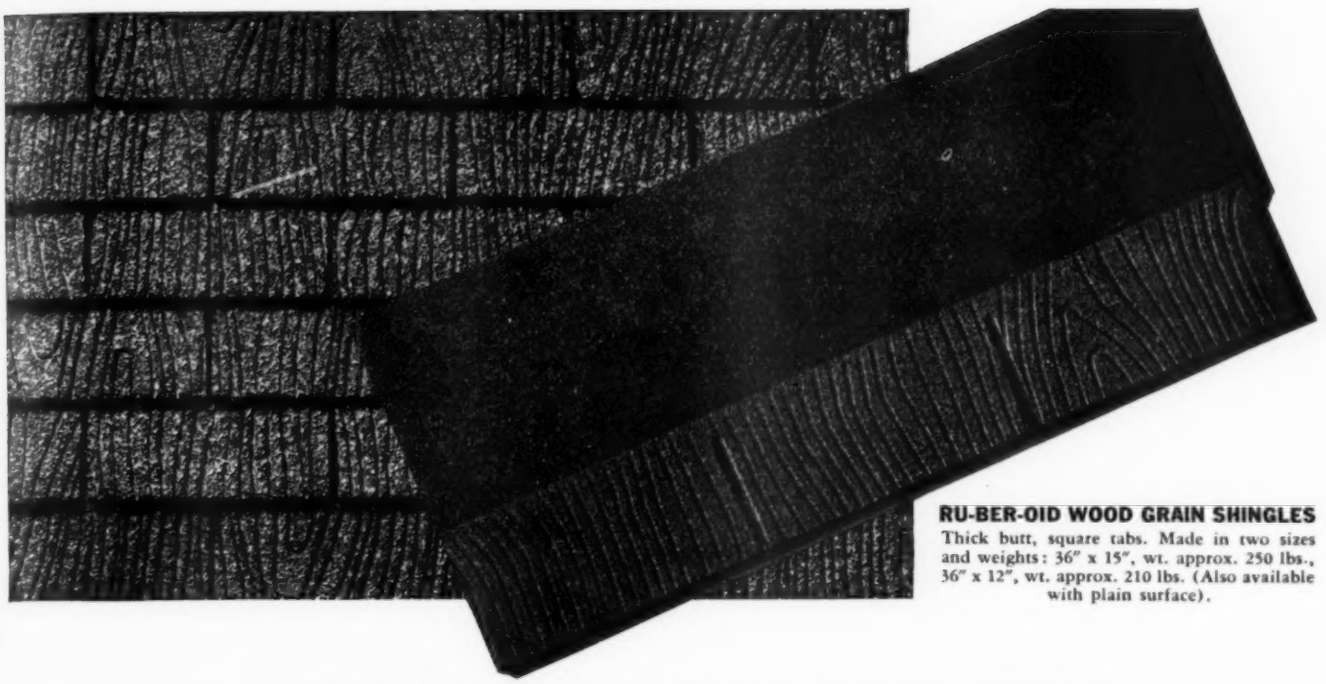
In addition, savings, building and loan associations keep local dollars at home. We help make jobs for local people by fostering local saving to encourage local home ownership.

You be the judge. Try this source of home financing money. See for yourself what "time-saving efficiency" means to you and the people you serve. Let a member of the United States Building and Loan League give you facts and details about this prompt, red-tape-less home financing service.

BUILDERS—*Our services include facilities to handle all types of home loans whether they be for new building, buying, remodeling or refinancing. Call us for information. You'll like our quick, friendly service.*

Your Local SAVINGS OR
BUILDING AND LOAN ASSOCIATION

When you support **Your Local Savings or Building and Loan Association—*You help local business!***



RU-BER-OID WOOD GRAIN SHINGLES
Thick butt, square tabs. Made in two sizes and weights: 36" x 15", wt. approx. 250 lbs., 36" x 12", wt. approx. 210 lbs. (Also available with plain surface).

A STYLE LEADER
with more than eye appeal!

Talk style and beauty first when you recommend this RU-BER-OID Thick Butt Asphalt Shingle. For beauty it has... the beauty of wood grain texture, in soft and mellow "wood tone" colors. This texture, and the heavy butts that cast deep shadows, intrigue every builder—every property owner.

But don't stop with beauty! Talk fire safety. Talk durability. Talk freedom from repairs. For this RU-BER-OID Shingle has all these features, and in abundance. It's RU-BER-OID quality through and through. There's even an extra measure of weather protection, for all exposed areas of Thick Butts are of double thickness. With all these features, you'd naturally think the price might be high. It isn't. It's inexpensive and you can recommend a weight to fit your customer's pocketbook.

Recommend RU-BER-OID Thick Butt Asphalt Shingles for eye appeal, but don't stop selling their other features. They, like other RU-BER-OID Building Products, have exclusive quality features that make selling a pleasure. Mail the coupon for literature on RU-BER-OID Wood Grain Shingles. Check in other RU-BER-OID Building Products of interest.

RU-BER-OID TEX-TABS
Wood grain texture in a lower priced shingle. Size: 36" x 11⅓", wt. approx. 167 lbs. Ideal for new construction and re-roofing work.

RU-BER-OID
ROOFING AND BUILDING PRODUCTS

BE SURE TO INVESTIGATE THE FULL LINE

Check the Ruberoid Building and Modernization Products which interest you:

- ☐ Asbestos-Cement Shingles
- ☐ Asphalt Roll Roofings
- ☐ Asbestos-Cement Sidings
- ☐ Asbestos Pipe Covering
- ☐ 'Newtile' for bath and kitchen walls
- ☐ Rock Wool House Insulation

The RUBEROID Co., 500 Fifth Avenue, New York, N. Y.

Send us folder illustrating Ruberoid Wood-Grain Asphalt Shingles. **A B 4-39**

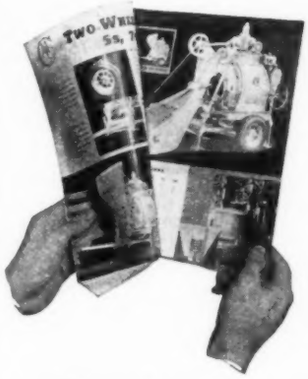
Name.....

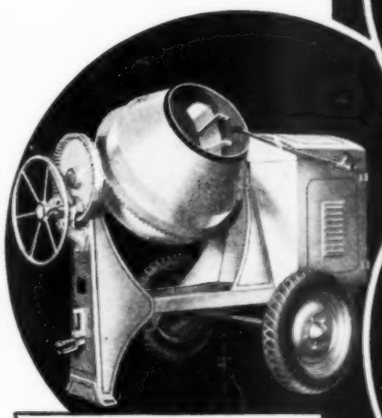
Address.....

City..... *State*.....

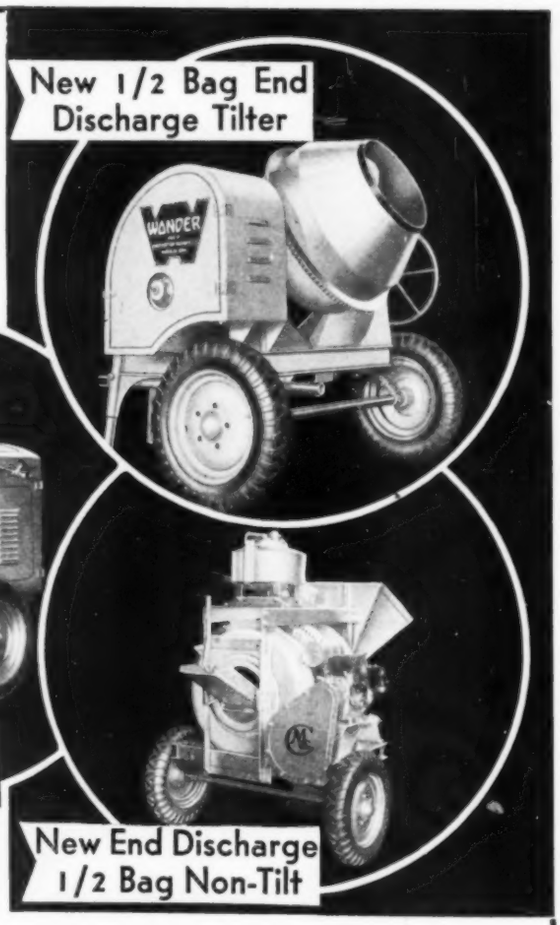
The PROFIT TRIPLETS

Here is the most complete array of modern half-bag Mixers in the field. Built to move faster and handle easier—to get jobs done quicker—to make more money for the builder. When you pick one or more of these Mixers you know you own the latest and best in small Mixer equipment.





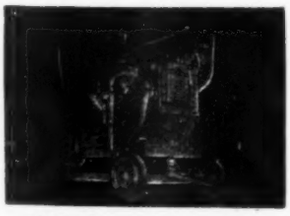
3 1/2 Standard Tilter



NEW CMC CATALOG NOW READY! BIGGER AND BETTER THAN EVER! SENT FREE!

CMC *AMERICA'S No. 1 EQUIPMENT LINE*

Two Wheel Trailers. 1, 2 and 3 Bag.

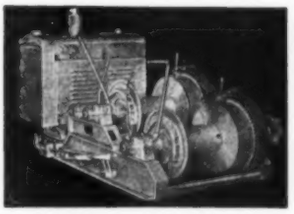


4-Wheelers—End or Side Discharge.

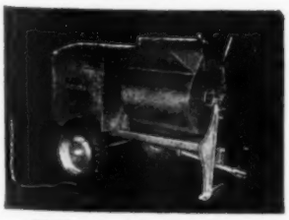
Men in the building field quickly see how the great improvements in these new CMC machines mean profits to them. This year CMC equipment is not only streamlined but profit-lined. Get the facts on CMC Mixers—all sizes, Plaster and Mortar Mixers, Dual Prime Pumps, Hoists, Saw Rigs, Pneumatic Tired Carts and Barrows. . . . before YOU BUY. It's America's No. 1 Equipment Line!

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

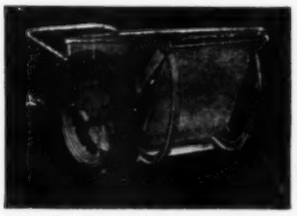
Dual Prime Pumps, from 1½" to 10"



Hoists up to 35 H.P.

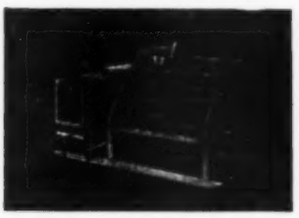


Plaster and Mortar Mixers.



Dumpover Material Carts.

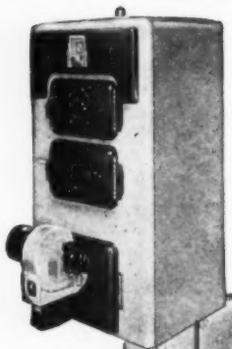
Better-Built Barrows.



Power Sawyer Portable Saw Rigs.

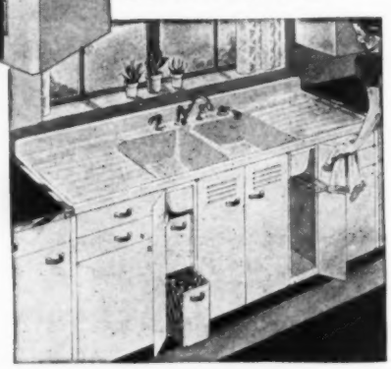
3 SELLING SPOTS
where you need names people know!

TWO PRODUCTS THAT HELP SELL HOMES



IDEAL ARCOFLAME HEATING UNIT NO. 7

Oil heat plus built-in summer-winter hot water supply in a single complete unit for average sized homes. Scientific flue passages, correctly shaped combustion space, air tight iron-to-iron connections, heavy asbestos insulation are just a few of its many features.



NEW 72-INCH "Standard" HOSTESS SINK

Has all the fine features of other Hostess Sinks, plus two additional storage compartments. One contains two vegetable drawers with wire sides, and the other is a sanitary towel compartment with sliding rail. Two drainboards, two 8" deep sinks, spacious drawers and compartments, acid resisting enamel finish are among its other features. Available in any "Standard" fixture color.

WHEN PROSPECTS see familiar and famous names in your homes it is like meeting trusted friends. It indicates more powerfully than any "sales talk" that you are a builder of good homes that offer full value for every dollar they cost.

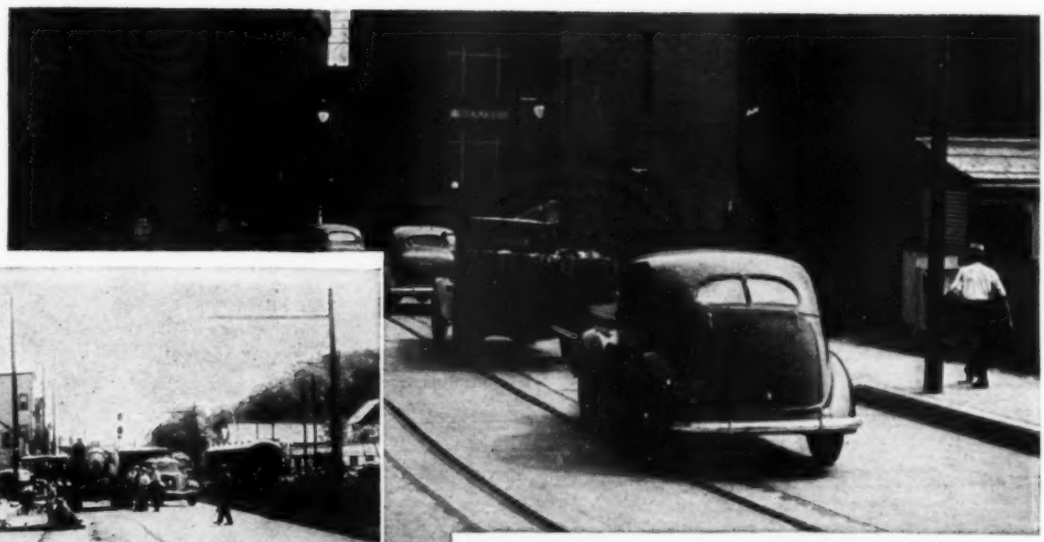
And well-known products save you selling time, too. You don't need to convince customers of the merits of either the products or the company that makes them.

This is the reason why so many builders use American Heating Equipment and "Standard" Plumbing Fixtures. These are names the public knows and accepts as the best.

Although American Heating and "Standard" Plumbing Fixtures give your homes extra prestige and more sales advantages, they cost no more than others!

It will pay you to use products bearing these names in the strategic sales spots in your homes.

AMERICAN RADIATOR & Standard Sanitary CORPORATION



Dickerson St., Dover, N. J.
WIDENING BUSY STREET.
Quick use of parking area was essential for convenience and safety. New pavement was in full use the morning of the third day.

TRAFFIC

Gibson Way, McKeesport, Pa.
BETWEEN CARTRACKS, quick service concrete permitted vehicle traffic the next day. Contractor, J. W. Butler, McKeesport, Pa.

on New Concrete

Route U. S. No. 1 near Richmond, Va.
PATCHING CONCRETE ROAD with quick service concrete avoided barricades—traffic was kept open at all times.

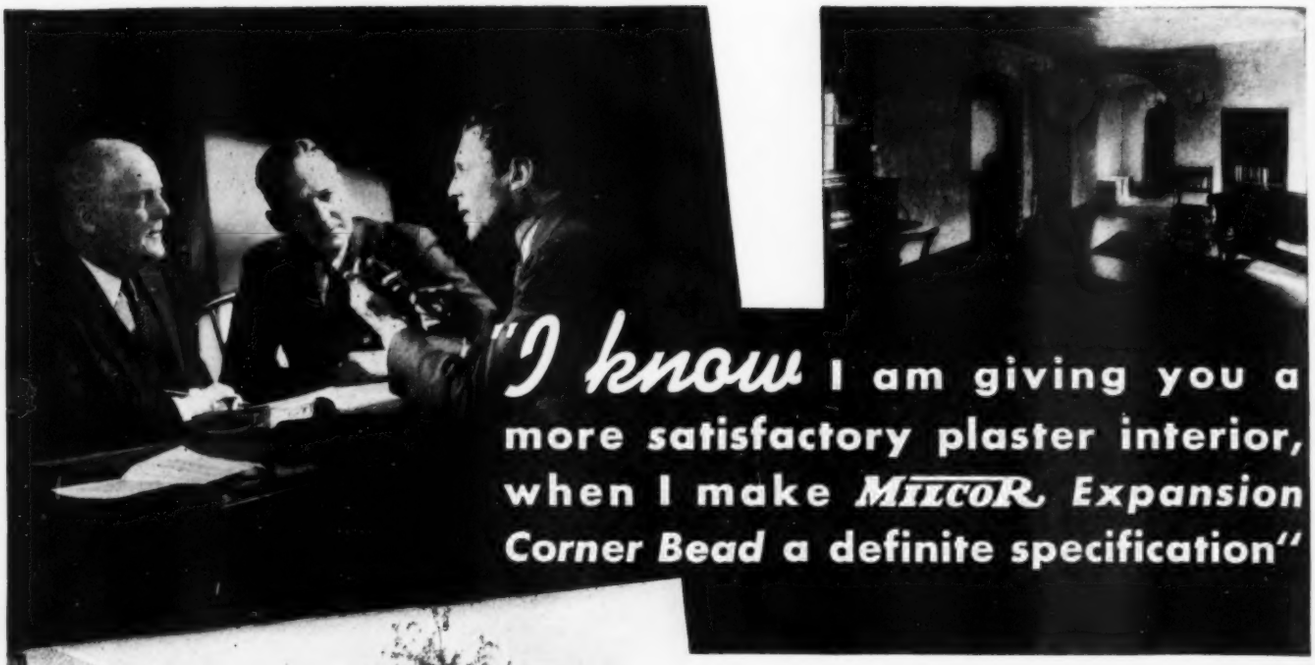
Main and Bloomington Sts., Streator, Ill.
AT HIGHWAY INTERSECTION new concrete open to traffic in 24 hours.

in 24 to 48 hours

LEHIGH
EARLY STRENGTH
CEMENT

For all purposes you get service strength concrete with Lehigh Early Strength Cement three to five times faster than with normal portland cement. It cures to service strength in from one-third to one-fifth the time. This speed, so vital for road and street work, as illustrated, has advantages, too, for any concrete work. It means quicker completion and use of the job and greater profit, because more work can be done with the same labor and equipment. Where forms are necessary, they can often be stripped in from 12 to 24 hours and reused, thus saving on form costs. And it saves, too, on overhead expense by reducing the time for completion of the entire job. In spring, with the uncertain weather and cool nights, it is a protection against damage from freezing. Try it for your next job.

LEHIGH PORTLAND CEMENT COMPANY
Allentown, Pa. Chicago, Ill. Spokane, Wash.



"I know I am giving you a more satisfactory plaster interior, when I make MILCOR Expansion Corner Bead a definite specification"

Milcor Corner Bead is used in Techwood Homes, a U. S. Government housing project in Atlanta. Burge & Stevens, Atlanta, Ga., Architects. Photo courtesy of FHA.

Milcor offers you the convenience of *the most complete line on the market.*

You can stake your reputation on MILCOR *Expansion Products*

Milcor Corner Bead is part of the Milcor *steel base system* that insures permanent plaster beauty and an enthusiastic home owner.

Milcor's interlocking web of expanded metal reinforces corners against unsightly cracks, chipping, or cleavage. The job stays *new*-looking — a credit to your reputation years from now.

Milcor originated and patented Expansion Corner Bead and provides everything you need, in all types of expansion products, to meet any structural condition — makes it so you can depend on it.

Your interior details can't name a Corner Bead, Picture Mould, or Base Screed that Milcor doesn't carry as a stock item. Only Milcor offers the new cove lath. Only Milcor gives you the major savings of Milcor fireproof partition systems — the most important development in years in fireproof construction. You get prompt service, without delays from the strategically located Milcor plants and warehouses, through your local Milcor dealer.

Write for your copy of the Milcor Manual, a practical reference book on fireproof building materials.

F-48A

Unit of the MILCOR SYSTEM of fireproof construction

Milcor here uses the word "system" in its true sense — not to signify a limited, inflexible setup applicable only under certain conditions, but to represent so great a range of individual products, types, weights, metals, etc., that a **complete, coordinated metal backbone** can be designed to suit **any** condition of fireproof construction — all with Milcor products engineered to work together.

MILCOR STEEL COMPANY

MILWAUKEE, WISCONSIN CANTON, OHIO

CHICAGO, ILL., KANSAS CITY, MO., LA CROSSE, WIS., ATLANTA, GA., NEW YORK, N. Y., ROCHESTER, N. Y., BALTIMORE, MD.

Sales Offices: Minneapolis, Minn., Little Rock, Ark., Dallas, Tex., Denver, Colo., Washington, D. C., Boston, Mass.

EFFICIENT PERMANENT LOW IN COST

KIMSUL

REG. U. S. & CAN. PAT. OFF.

Expanding Blanket

INSULATION

1 SEE HOW SNUGLY IT FITS!
Kimsul is made the proper width to fit snugly between standard spaced studs. No cutting or fitting . . .

2 NOTE HOW CONVENIENTLY
it can be worked around wires, pipes, etc.! As flexible as a blanket, obstructions in a wall cause no difficulties when insulating with Kimsul . . .

3 AND EVERY BIT IS USABLE!
Even short ends left over from insulating non-standard spaces make ideal caulking material.

● The "on the job" photographs above show some of the reasons why Kimsul is efficient and permanent as well as low in cost.

To be efficient, insulation must provide *complete* protection. Because Kimsul fits snugly, and is so flexible that it can be easily worked around or behind wires, pipes, or other obstructions, no areas need be left unprotected . . . the ease of installation means that even an inexperienced workman is not apt to slight any point.

. Nailed on at top and bottom, Kimsul stays put. It is highly resistant to fire, vermin, and moisture . . . so it is permanent.

Its low cost per square foot, combined with unusual ease of installation and the fact that every bit is usable, means this efficient insulation can be provided at very low cost . . . actually, in most cases, the fuel savings, due to Kimsul, more than pay its entire cost in a few years.

OF SPECIAL INTEREST TO CONTRACTORS

When attending the New York World's Fair, see the following buildings, all of which are insulated wholly or in part with Kimsul.

1. G. E. Home No. 18 in the "Town of Tomorrow"
2. Kelvin Home No. 16 in the "Town of Tomorrow"
3. Swift & Company Exhibit Building
4. U. S. Steel Building
   (KIMSUL used for acoustical treatment of air conditioning equipment room)
5. Toffenetti Restaurants
   Owned by Triangle Restaurants

KIMBERLY-CLARK CORPORATION (Kimsul Division), Neenah, Wisconsin
Established 1872 AB4
NEW YORK, 122 East 42nd Street • CHICAGO, 8 South Michigan Avenue

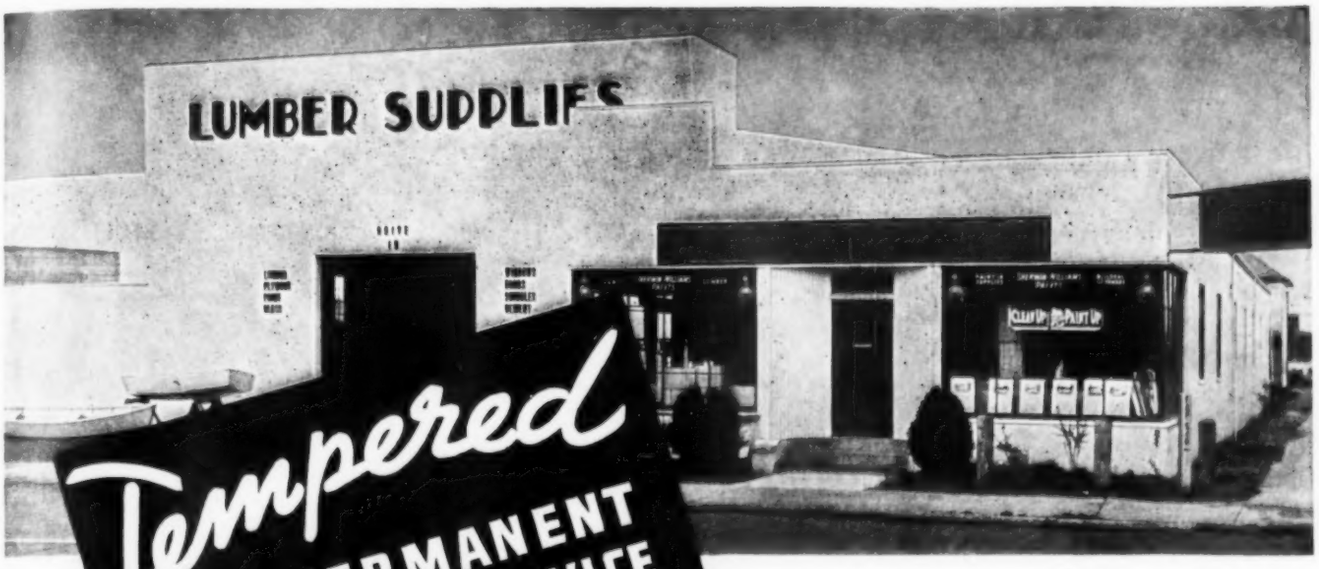
Mail me, without obligation, copy of booklet describing Kimsul, also a full sized sample.

*Name*_____

*Address*_____

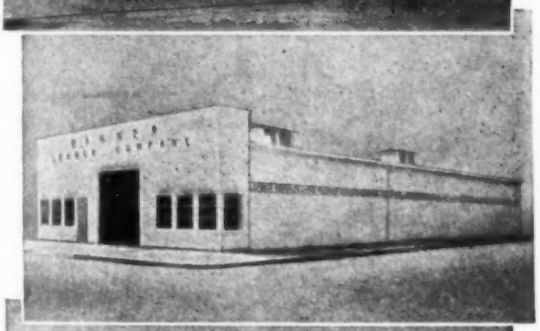
*City*_____ *State*_____

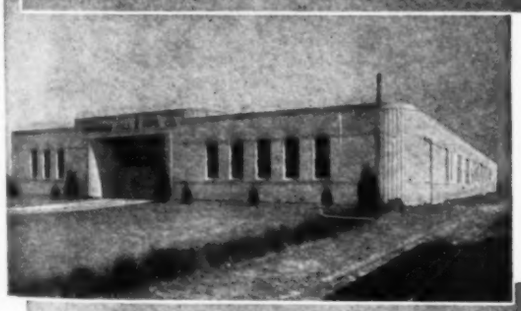
PLEASE CHECK: ARCHITECT ☐ BUILDER ☐ DEALER ☐



Tempered FOR PERMANENT EXTERIOR SERVICE

SUPER-Harbord
THE OUTDOOR PLYWOOD





* * * * *When applied on construction otherwise approved, SUPER-Harbord is acceptable for F.H.A. Mortgage Insurance.* * * * *

Tempering in SUPER-Harbord, like the tempering of metals, relieves internal stresses and balances construction — to produce a permanently weatherproof exterior plywood that behaves uniformly in service. The retail and service buildings shown here, are built of SUPER-Harbord—and show its adaptability to this and other types of permanent exterior construction, both for business and residential use.

Only through an exclusive, patented manufacturing process* — of which tempering is an important part — is SUPER-Harbord made permanently weatherproof—with plies fused together more solidly than a single board and guaranteed against separation due to moisture or any weather condition — with balanced cross-banded construction that will not crack or split.

Large easily-handled panels afford a variety of design possibilities and definite labor economies. New synthetic resin finishes, REZITEX and REZICOTE, developed by I. F. Laucks, Inc., further enlarge the field of exterior design for SUPER-Harbord.

SUPER-Harbord, edge-branded for your protection and Laucks synthetic resin finishes, are quickly available from our strategically located distributing warehouses.

★ *For a weatherproof plywood guaranteed against separation of plies due to any moisture or weathering condition, specify SUPER-Harbord, or "exterior plywood hot-pressed with a cresylic formaldehyde synthetic resin binder, and then tempered."*

FOR FURTHER INFORMATION
SEE OUR CATALOG IN SWEET'S

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DISTRIBUTING WAREHOUSES: Atlanta, Baltimore, Chicago, Cincinnati, Cleveland, Columbus, Indianapolis, Jacksonville, Los Angeles, Miami, Milwaukee, New Orleans, Philadelphia, Pittsburgh, San Francisco, Tampa, Toledo, Washington, D. C.

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to *all* questions on All-Gas Houses and Apartments in the May AMERICAN BUILDER

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- *Photographs and floor plans of All-Gas houses and apartments of three to nine rooms, costing from $3,000 to $20,000.*
- *Modern kitchen planning, with photographs and layouts showing ranges, refrigerators, built-ins.*
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The Gas Insert in the May AMERICAN BUILDER offers a unique opportunity to address a powerful sales story to active building men who control 75 per cent of the nation's residential and light-load-bearing construction.

plus

A very valuable circulation bonus of Gas Insert Reprints placed in the hands of leading Utility Companies actively interested in promoting the construction of All-Gas Houses and Apartments.

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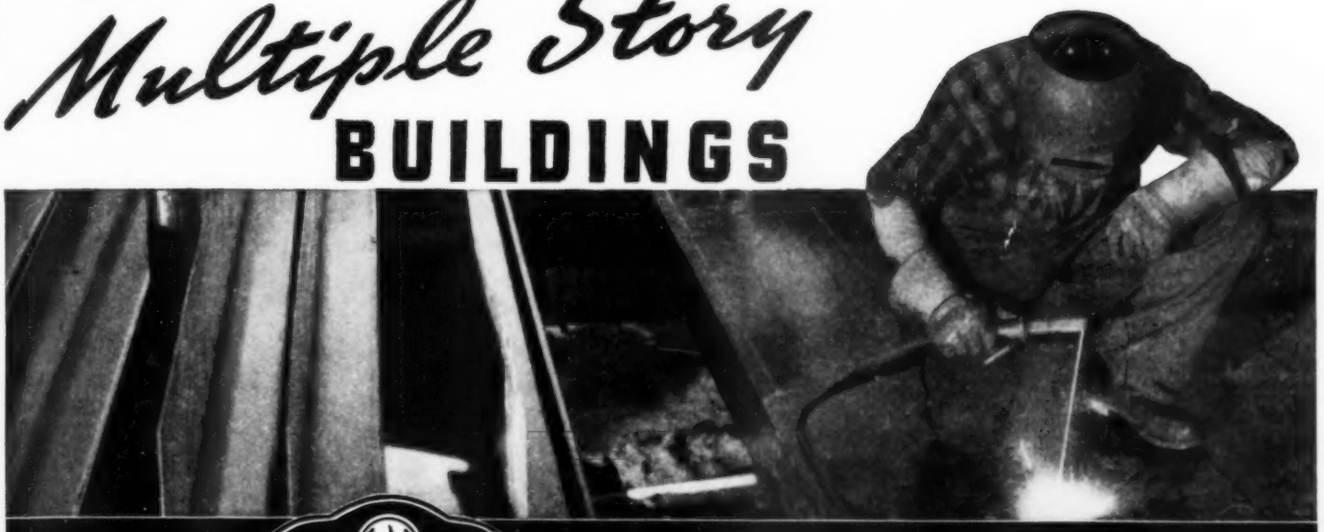
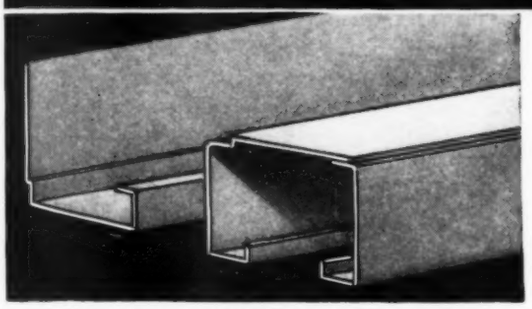
SEATTLE: 1038 Henry Building
SAN FRANCISCO: 485 California Street
LOS ANGELES: Union Bank Building

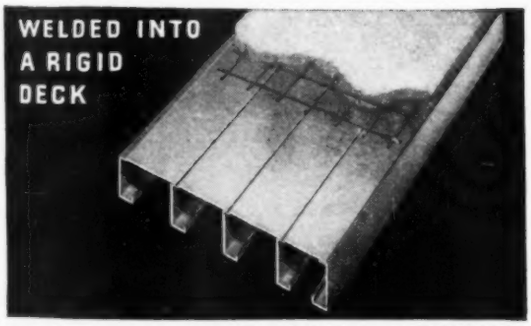
ON *Multiple Story* BUILDINGS



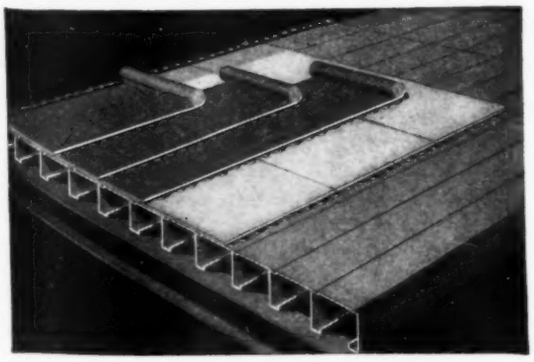
Use Wheeling CORRUGATING COMPANY LONG-SPAN STEEL FLOOR AND ROOF SYSTEM



LONG STEEL JOISTS



FOR ANY KIND OF FLOORING



OR BUILT-UP ROOFING

and make IMPORTANT SAVINGS

Quickly Erected. A crew of six men can erect and complete approximately 1,000 square feet of Wheeling Long Span Steel Floor or Roof in one hour. The Long Span Joists of genuine COP-R-LOY, 12 or 14 gauge, are 5", 6" or 8" deep and as long as 22 feet to span the distance from girder to girder or from truss to truss.

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Save on Scaffolding! All exterior masonry work can be done directly from the floor deck.

These are only a few of the advantages you gain when you use the Wheeling Long Span Steel Floor and Roof System. Write for full details on this practical fire-safe construction today.

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- ***STREAMLINE*** **Flooring is simple to install. You lay it exactly like regular strip flooring.**
- ***STREAMLINE*** **Flooring will please owners. They'll like its appearance—its finish—and its cost.**

A FACTORY FINISHED FLOORING AT AN AMAZING LOW COST

● Now you can give homeowners all the advantages of a factory-finished flooring — at an installed cost even less than that of ordinary flooring finished on the job. And you can handle more jobs, make more money —because this flooring can be installed so quickly and easily.

Bruce ***STREAMLINE*** Flooring is genuine 25/32" oak flooring with a 3¼" face. Bevels on the ends and sides produce a floor with a distinctive patterned appearance.

This flooring is completely finished at the Bruce Plant, with the same superior materials and methods which have been successfully used on millions of feet of Bruce Finished Blocks.

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